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Key Factors Influencing the Adoption and Utilisation of E-Government Systems and Services in Saudi Arabia

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Submitted for the degree of Doctor of Philosophy
Informatics Department
University of Sussex
December 2016

Declaration

I hereby declare that this thesis has not been and will not be, submitted in whole or in part to another University for the award of any other degree.

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UNIVERSITY OF SUSSEX

SALEH ALGHAMDI, DOCTOR OF PHILOSOPHY

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SUMMARY

Electronic Government (E-Government) has become very important in recent years. It can be described as a system of digital interaction between a government and other parties, such as citizens, companies, employees, ministries and other government organisations. One of the most important elements of implementing E-Government systems is the interaction between users and E-Government systems, specifically the adoption and utilisation by those users, who are the main target of such systems. However, e-Government systems are still in the early stages in most developing countries including Saudi Arabia, and face many issues related to adoption, implementation and utilisation. Moreover, there is a lack of studies that investigate and analyse users' adoption and utilisation from different perspectives and also a lack of comprehensive frameworks specifically developed for such analysis. Thus, this research aims to investigate, analyse and understand the key factors that influence users' adoption and utilisation of e-Government systems and services in Saudi Arabia with a holistic approach. This could be used to enhance the current acceptance and use level and also would contribute to providing a user-centred path for designing and implementing new e-Services and government electronic systems. This study also aims to fill the knowledge gap in current e-Government literature about what might constitute a comprehensive framework on which to base such investigations.

In order to achieve the research objectives, a comprehensive conceptual framework, namely, E-Government Adoption and Utilisation Model (EGAUM), was developed from a critical evaluation of several common models and theories related to technology acceptance and usage, in conjunction with a review of e-Government adoption literature. The developed model was then utilised to investigate and understand the influential factors on the adoption and utilisation of different types of users; namely, citizens, government employees and users from the business sector. A multiple method was employed in this research which includes a quantitative approach (as a main method) and a qualitative approach (as a supportive method). Several analysis procedures were employed, including descriptive and statistical analysis to validate the research model and to determine the significant influential factors.

The results revealed that the user's *Education Level*, *Perceived Benefits* and implementing *Regulations and Policies* related to the e-Usage are common significant factors for the adoption and utilisation by all types of users. Moreover, the *Functional Quality of Service/System, Perceived Simplicity* and *Socio-Cultural* factors were found to be significant for the adoption and use of government employees and citizens. It was also found that *Awareness* plays a significant role in enhancing the adoption and use of public employees and users from the business sector.

As a result of these findings, the research developed number of recommendations that can serve as guidelines for successful implementation of e-Government systems and services based on users' perceptions, attitude, beliefs, needs and choices.

Acknowledgement

“Praise be to God, the Lord of the Worlds, and prayers and peace envoy to the mercy to the worlds.” After sincerely thanking ALLAH (GOD) for all blessings and guidance to complete this thesis, I would like to express my thanks to many people, without whom I could not have completed my thesis.

Firstly, I would like to express my sincere gratitude to my supervisor Dr. Natalia Beloff for her tireless support, patience, insightful suggestions, encouragement and invaluable guidance. Her continuous support and guidance helped me all the time of this research. I also would like to sincerely thank Dr. Martin White, my second supervisor, for his insightful comments and valuable suggestions.

Secondly, my greatest indebtedness to my wife Areej for her continuous encouragement, inspiration and support all the way through my studies, and to my shining son Basel whose their patience and love inspired me to achieve my goal. A big thank you to them for tolerating the long hours being away from them working at the university.

I owe a special thanks to my deceased father and mother whose souls and spirits are still with me; always their prayers and love inspire me to achieve my ambition. I am sure they would have been proud of my work. Also, I would like to thank my brothers, my sisters, my father-in-law, my mother-in-law and my relatives for their moral support and continuous prayers. My sincere thanks also go to my friends Dr. Mohammed Alhomidi, Sultan Alahmari, Dr. Nasser Abalkhail, Haitham Althobiti and Majed Aloboudi for their encouragement and advice.

My appreciation is extended to my sponsor, King Abdulaziz City for Science and Technology for their financial support during my study and for facilitating my scholarship processes. I extend my thanks to YESSER program members who facilitated this work and provided assistance. Thanks also to the participants who so kindly participated in this research. To all who helped me during this incredible stage of my life, I owe you thanks.

Publications

The following papers have been published or submitted for publication as a direct result of the research discussed in this thesis:

- Alghamdi, S. and Beloff, N. (2014) Towards a comprehensive model for e-government adoption and utilisation analysis: the case of Saudi Arabia. *Federated Conference on Computer Science and Information Systems, 2014. IEEE*, Warsaw, pp. 7–10.

- Alghamdi, S. and Beloff, N. (2015) Exploring determinants of adoption and higher utilisation for e-Government: A study from business sector perspective in Saudi Arabia. *Computer Science and Information Systems Conference (FedCSIS), 2015. IEEE,* Lodz, pp. 1469-1479.

- Alghamdi, S. and Beloff, N. (2016) Innovative Framework for e-Government adoption in Saudi Arabia: A Study from the business sector perspective. *International Journal of Advanced Computer Science and Applications (IJACSA)*, Vol. 7, No. 1, 2016.

- Alghamdi, S. and Beloff, N. (2016) Understanding the influential factors on the adoption and use of e-Government systems: a study from public employees' perspective in Saudi Arabia. Submitted for publication in *The Electronic Journal of E-Government.*

Abbreviations

ICT	Information and Communication Technology
IT	Information Technology
IS	Information Systems
KSA	Kingdom of Saudi Arabia
E-Government	Electronic Government
E-Services	Electronic Services
E-Transactions	Electronic Transactions
E-Participation	Electronic Participation
E-Coordination	Electronic Coordination
E-Business	Electronic Business
E-Commerce	Electronic Commerce
E-Usage	Electronic Usage
G2C	Government to Citizens
G2B	Government to Business
G2G	Government to Government
G2E	Government to Employees
G2SC	Government to Civil Society organisations
C2C	Citizens to Citizens
TRA	Theory of Reasoned Action
TAM	Technology Acceptance Model
DOI	Diffusion of Innovation
PCI	Perceived Characteristics Innovation
UTAUT	Unified Theory of Acceptance and Use Technology
EGAUM	E-Government Adoption and Utilisation Model
PF	Personal Factors
MF	Motivational Factors
TF	Technical Factors
RF	Reliability Factors
PB	Perceived Benefits
SC	Socio-Cultural
AW	Awareness
FQS	Functional Quality of Service/System
PE	Previous Experience
PS	Perceived Simplicity
TQS	Technical Quality of Services/System
ACC	Accessibility
PT	Perceived Trust
RP	Regulations and Policies
ITU	Intention to Use
PER	Perceived E-Readiness

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Chapter One: Introduction

1.1 The research context

Information and Communication Technologies (ICTs) are considered the backbone of many activities that are carried out nowadays. They have tremendous potential to provide solutions and solve problems in different aspects which then lead to an enhanced quality of life. Given the fact that fast development of Information Technologies (IT) leads to the rapid increase of the number of websites and services provided by governments; nearly all governments in countries around the world have at least a web presence or what is so-called e-Government (Davidrajuh, 2004). Electronic Government (E-Government) is an issue that has become very important in recent years. Currently, the role of ICTs is crucial in governance processes where they can help to create a structured network for service delivery (Alshafi & Weerakkody, 2010), effectiveness and efficiency (Archmann & Castillo Iglesias, 2010) and interactivity, accountability and transparency (Gebba & Zakaria, 2012).

E-Government can be described as systems that provide digital interactions between the government and other parties, such as citizens, companies, employees, ministries and other governmental organisations. They are essentially the utilisation of information technologies (IT), information and communication technologies (ICTs), and other web-based telecommunication technologies in order to improve and enhance the professional functions and the effectiveness of services (Jeong, 2007). E-Government systems are a fundamental element in the modernization of government; and such systems are highly required nowadays in order to connect information and services efficiently, thereby solving many problems, providing services and improving quality of life (Lordmwesh, 2011).

The field of Electronic Government is growing considerably; therefore, many research areas need to be studied in order to provide scientific insights (Grönlund & Horan, 2005). One of the most important elements of implementing E-Government systems is the interaction between users and E-Government systems, specifically the adoption and utilisation by users, who are the main target when implementing such systems. This interaction element is considered the main method for measuring the utilisation and success of E-Government systems. If there is no interaction between users and e-Government systems, this means that there is no benefit to implementing such systems. Therefore, understanding and investigating the electronic interaction between government agencies and users is very important, especially in the current advanced IT era. Many online public e-Services have been provided in recent years in different countries, including Saudi Arabia, and there are more e-Services under development.

As governments develop e-Government systems to provide e-Services to stakeholders, the adoption and usage level is still low especially in developing countries (Ziemba et al., 2013; Rehman et al., 2012; Al-Shafi & Weerakkody, 2010; AlAwadi & Morris, 2009 and Kunstelj et al. 2007). Successful implementation of ICTs in government units and satisfactory usage level by all government stakeholders are the main goals of e-Government. Thus, analysing the significant factors that influence the adoption and utilisation of e-Government is becoming a necessity. Besides the need to increase the adoption and utilisation level of the implemented e-Government systems, it is also crucial to understand the factors that can influence the adoption and usage of the new e-Services. The analysis of such factors will bring e-Government service to a more successful level; and will also outline the path for developing new e-Government services. Most of the studies in the literature have focused on implementing e-Government from technical and structural perspectives (Ebrahim & Irani, 2005; Chanchary & Islam, 2011 and Alshomrani & Qamar, 2013). Several studies have also focused mainly on analysing barriers to and challenges of implementing e- Government (Alshehri et al., 2012 and Alateyah et al., 2012). However, few recent studies have been conducted to discover and analyse factors that can affect the adoption and utilisation of e-Government from the users' perspective (Alshafi & Weerakkody, 2010; Al-adawi et al., 2005 and Sahraoui, 2005).

Therefore, this research will investigate and analyse factors that could influence the adoption and utilisation of e-Government in Saudi Arabia from different perspectives; including the citizens' perspective, the business sector's perspective and government employees' perspective. Several key factors involved in the investigation and analysis of this research including personal factors, motivational factors, technical factors and reliability factors. The investigation and analysis of such factors creates a better understanding of the users' adoption and intention to use e-Government systems and this would contribute to achieving a high level of e-Government success.

1.2 Problem Statement

E-Government initiatives are still in the early stages in most developing countries, including Saudi Arabia; and face many issues related to adoption, implementation and utilisation. Users' adoption of e-Government systems is less than satisfactory in many countries, particularly in developing countries. Although large amounts of money have been invested in e-Government initiatives in some of these countries, such as the Arab countries, they still have many challenges and shortcomings that limit the adoption and minimise the utilisation of e-Government systems, which influence the success of such systems (Ziemba et al., 2013). The unexpectedly slow adoption rate of Information Technology (IT) application has lead

researchers and practitioners to seek to analyse and understand, manage and predict its diffusion, usage and utilisation (Attewell, 1992).

It is apparent that e-Government programmes and systems cannot be implemented by a unified and universal model. This is because of several factors that differ from one context to another; including the political, cultural, economical, infrastructural and demographic factors which need to be considered. Saudi Arabia, in particular, has religious, cultural and infrastructural factors that need to be considered when studying the users' adoption and intention to use since such factors play a critical role in how e-Government is perceived, accepted, adopted and used (Al-Sabti, 2005). Moreover, the investigation and analysis of the influential factors need to be derived from the perspectives of the actual users. Heeks (2003), claims that one of the main reasons that can lead to the failure of e-Government implementation is the inconsistency between design and reality. This means that implementing an interactive system such as e-Government without considering the actual users' perceptions, believes, intentions and needs would likely lead to failed implementation. Ali et al. (2009), stated that most of the developing countries rely on external experts when implementing interactive systems such as e-Government systems. This includes external companies or external professionals. This often fails to consider many aspects and needs related to the targeted users, which then leads to failure in practice.

The last United Nations E-Government survey that was undertaken in 2014 aimed to measure and rate e-Government performance amongst different countries around the world and revealed a rapidly increasing rate of performance in Saudi Arabia, with a global ranking of 70th in 2008, 58th in 2010 to 41st in 2012 and reaching to 36th in 2014. The survey showed that Saudi Arabia is above the global average in terms of supporting ICT infrastructure, human capacity development and online service advancement. On the other hand, Saudi Arabia was found to be below the global average in terms of e-Participation (Alsaif, 2013a) (UN, 2014). This survey aims to rate and compare the performance of different countries in implementing e-Government, not to capture e-Government development in an absolute sense (UN, 2014).

Yesser, which is the e-Government program in Saudi Arabia, has conducted a survey to measure customer preparedness (individuals and businesses) for the use of e-Government services. It revealed a high level of program awareness (82%) and also a high level of trust (92%) amongst individuals. However, it also revealed low levels of usage and satisfaction at 58% and 55% respectively. Furthermore, the survey also showed relatively high levels of program awareness and trust amongst business firms at 78% and 92% respectively. On the other hand, it also showed low levels of usage and satisfaction at 66% and 46% respectively (Yesser, 2010).

The implementation of e-Government systems has been studied widely from technical and management perspectives (Alsaif, 2013a). However, some studies suggest that there are factors that affect users' adoption and intention to use e-Government services and the lack of studies that consider such factors has become an issue especially in developing countries (Taiwo et al., 2012). Thus, there is a need to study the implementation of e-Government systems from the adoption and utilisation perspectives and consider the factors that have influence and impact on the users' acceptance of and intentions to use these systems. Understanding such factors from a comprehensive perspective and also from the actual users' point of view would significantly contribute to the success of implementing e-Government services and systems which then lead to higher adoption and better usage. A number of studies have considered the adoption of e-Government in developing countries but with several limitations including the use of limited or inapplicable frameworks, limited factors and limited considerations of the real and actual aspects when measuring the influence of several factors; also some studies only involved certain users such as university students. Thus, the need for a comprehensive framework, realistic measurement of the proposed factors and the involvement of diverse users are crucial to better understand the adoption and utilisation of e-Government systems. This research seeks to address these gaps by proposing a comprehensive framework that includes key factors, measuring these factors from the perspectives of a variety of actual users in the research context, which is Saudi Arabia, and then analysing the influence of these factors to conclude with comprehensive results.

1.3 The research objectives and significance

The importance of this research lies in the need to understand the factors and aspects that influence users' adoption and utilisation of e-Government services and systems in Saudi Arabia. This would enhance the current acceptance and use level and also would contribute to providing a user-centred method for designing and implementing new e-Services. Moreover, the lack of a comprehensive framework to be used as base for analysing the adoption and usage of the interactive systems, particularly e-Government systems in this research, is another aspect that shows the significance of this research. Many studies in the e-Government literature have utilised frameworks and models in an attempt to understand and analyse determinants and factors that have impact on users' intentions to adopt and use. Many of these frameworks and models lack comprehensiveness in terms of including important and related constructs. They either focused on one aspect such as trust or culture, focused on limited factors or they combined several constructs from different theories and models in a complex way. Thus, the need for a simple, clear and comprehensive framework that involves key constructs that are

derived and measured from the actual situation is significant. It is also important to consider the local context of where the study is conducted and also the country-specific and culture-specific aspects of the targeted context. Furthermore, considering different perspectives and different points of views is fundamental to providing a wider understanding of adoption and use. Therefore, this research investigated and analysed the proposed influential factors from different perspectives. This involved the citizens' perspective, the perspective of users from the business sector and government employees' perspective; and this also reflects the significance of this research to provide a better understanding.

The use of developed Information and Communication Technologies (ICTs) should be combined with an understanding of what the users need when designing and implementing public online services. It is crucial to understand the users' needs and measure what increases their adoption and utilisation level if e-Government systems and services are to be successfully implemented. Although the implementation of e-Government systems differs extensively from country to country in terms of missions and objectives, all of them have in common a central value of e-Government, which is to be user-focused or user-centric. The acceptance, diffusion and success of an e-Government program are contingent upon users' willingness to adopt its services (Shareef et al. 2011). Thus, one of the most significant aspects of implementing e-Government systems and services is the willingness of its users to adopt and utilise them (Evans & Yen, 2006; Shareef et al., 2009a and Verdegem & Verleye, 2009). However, this acceptance is still low and limited in many countries (Kunstelj et al., 2007; Ebbers et al., 2008; Bertot & Jaeger, 2008; AlAwadhi & Morris, 2009 and Ziemba et al., 2013).

The adoption and utilisation of e-Government systems is not something that happen automatically just because services are made available electronically (AlMahroqi, 2012). Thus, this research seeks to identify and investigate factors that affect the adoption and utilisation of e-Government systems. Specifically, a consideration of aspects and factors associated with higher adoption and use of e-Government in the Kingdom of Saudi Arabia is the aim of this research. Considering different users' perspectives from both the consumers' side (citizens and business sector) and providers' side (government employees) was also one of this study's objectives. Furthermore, this research also aimed to develop a comprehensive model that can address and identify constructs that influence users' adoption and utilisation of e-Government in Saudi Arabia. This conceptual model involves personal, motivational, technical and reliability factors that measure the users' attitudes, beliefs and perceptions about e-Government, whilst keeping in view the local context of Saudi society. The research objectives can be summarized as follows:

- Critically review and investigate the most common models and theories related to the technology acceptance and adoption, which are used by many studies in the e-Government literature, to assess their applicability to the context of e-Government.

- Develop a more comprehensive model for e-Government adoption and utilisation analysis by considering the integration of key constructs from the assessed models and theories.

- Utilise the proposed model to understand and analyse the influence of the proposed factors on the adoption and utilisation of different types of users:

    - The Saudi citizens who use e-Government services for their governmental transactions.

    - The users from business sector including the business entities' owners and the private employees who use e-Government services for the governmental transactions that are related to their business entities.

    - The government employees who use e-Government systems to process and deal with customers' transactions.

- Provide results, guidelines and recommendations for e-Government services providers and governmental agencies that help them to design, implement and provide e-Services and e-Transactions based on the users' needs, attitudes and perceptions. This would help to implement e-Government systems that are tailored to the users' needs and choices which then contribute to achieving higher adoption, utilisation and satisfaction. This also would contribute to the dissemination and widespread adoption of this innovation.

1.4 The research questions

These questions will attempt to address the aims of this study, and are:

1. What is the most appropriate theoretical framework that could be used to analyse the adoption and utilisation of e-Government services and systems from the users' perspectives, specifically in Saudi Arabia?

2. What are the factors that influence the adoption and use of e-Government services and transactions by citizens in Saudi Arabia?

3. What are the factors that influence the adoption and use of e-Government services and transactions that are provided to the business sector from the perspectives of this sector's users?

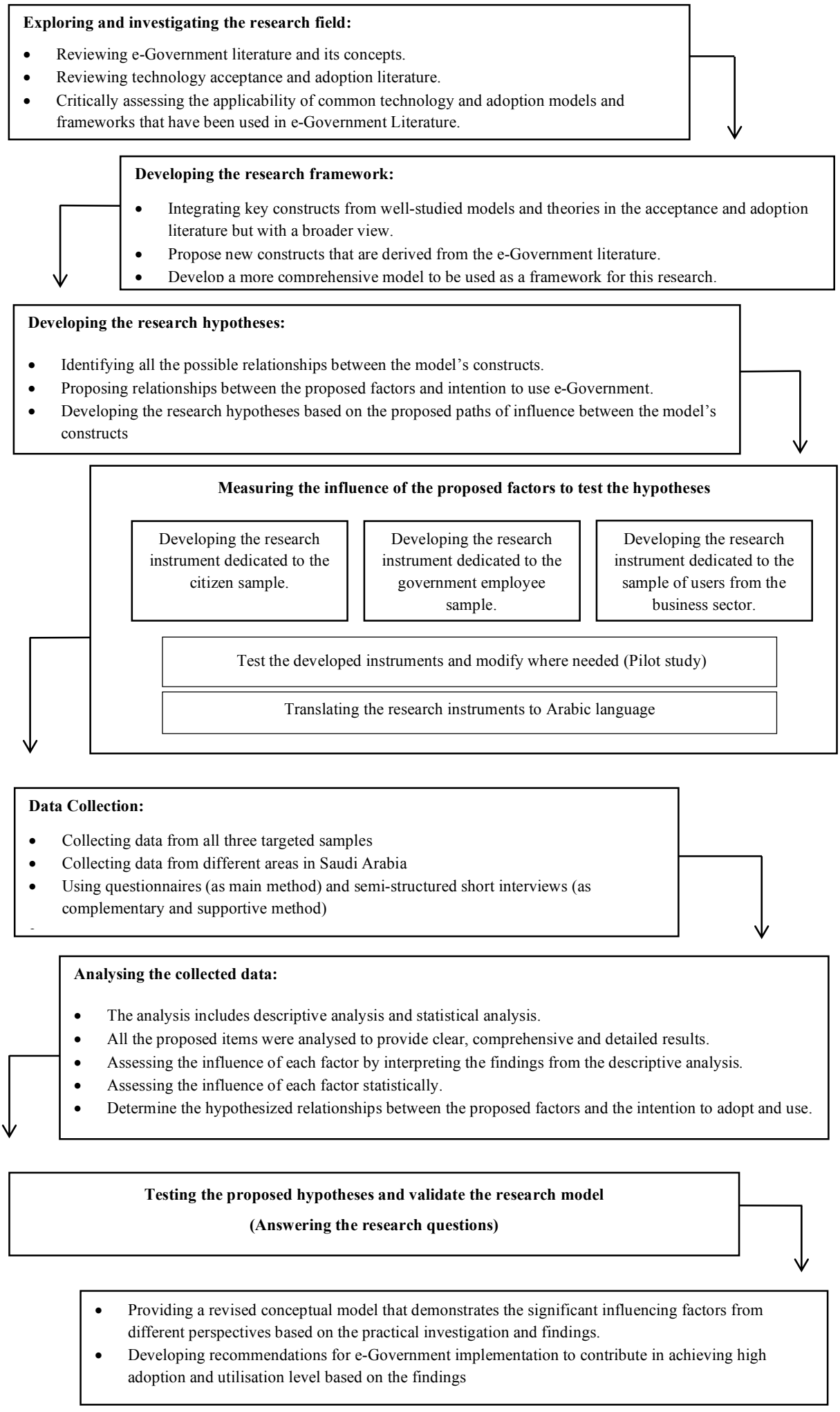
4. What are the factors that influence the adoption and use of government employees when using e-Government systems to process customers' transactions including citizens' transactions and the business sector's transactions?

5. How could adoption and utilisation levels be enhanced when implementing e-Government systems based on the users' perceptions, attitudes, beliefs, needs and choices?

1.5 The research scope and phases

This research examines and analyses the adoption and utilisation of e-Government services and systems in the Kingdom of Saudi Arabia. The research focuses on the Government-to-Citizens (G2C) and Government-to-Business (G2B) domains. It also focuses on the adoption and use of the e-Government systems by government employees who use such systems to process customers' transactions. So the study involves analysing the influential factors from both sides – i.e. the consumers and providers of e-Services and e-Transactions. In other words, the study focuses on the adoption and utilisation of all users who are involved in performing and processing e-Services and e-Transactions that are provided to customers, who are the main target when implementing such national systems. Thus, the study is concerned with the success of e-Government services from the beneficiary perspective (citizens and business sector) and also from the provider perspective (employees) by investigating and analysing key factors that influence those users' adoption and utilisation.

The research was conducted systematically as shown in Figure 1.1:


Exploring and investigating the research field:
Reviewing e-Government literature and its concepts.
Reviewing technology acceptance and adoption literature.
Critically assessing the applicability of common technology and adoption models and frameworks that have been used in e-Government Literature.
Developing the research framework:
Integrating key constructs from well-studied models and theories in the acceptance and adoption literature but with a broader view.
Propose new constructs that are derived from the e-Government literature.
Develop a more comprehensive model to be used as a framework for this research.
Developing the research hypotheses:
Identifying all the possible relationships between the model's constructs.
Proposing relationships between the proposed factors and intention to use e-Government.
Developing the research hypotheses based on the proposed paths of influence between the model's constructs
Measuring the influence of the proposed factors to test the hypotheses
Developing the research instrument dedicated to the citizen sample.
Developing the research instrument dedicated to the government employee sample.
Developing the research instrument dedicated to the sample of users from the business sector.
Test the developed instruments and modify where needed (Pilot study)
Translating the research instruments to Arabic language
Data Collection:
Collecting data from all three targeted samples
Collecting data from different areas in Saudi Arabia
Using questionnaires (as main method) and semi-structured short interviews (as complementary and supportive method)
Analysing the collected data:
The analysis includes descriptive analysis and statistical analysis.
All the proposed items were analysed to provide clear, comprehensive and detailed results.
Assessing the influence of each factor by interpreting the findings from the descriptive analysis.
Assessing the influence of each factor statistically.
Determine the hypothesized relationships between the proposed factors and the intention to adopt and use.
Testing the proposed hypotheses and validate the research model
(Answering the research questions)
Providing a revised conceptual model that demonstrates the significant influencing factors from different perspectives based on the practical investigation and findings.
Developing recommendations for e-Government implementation to contribute in achieving high adoption and utilisation level based on the findings

1.6 Contribution to knowledge and practice

The outcomes of this research will contribute to the knowledge and practice in the area of e-Government adoption and utilisation by analysing the salient factors that influence the acceptance and use of the potential users, which then bring the e-Government systems and services to a more successful level. This research will provide many contributions to the knowledge and practice of e-Government, which can be summarized as follows:

- This research provides a critical review of the most common theories and models related to the technology acceptance that are used by many studies to analyse e-Government adoption and intention to use. Although such theories and models are well-researched and powerful, this review shows that the analysis of e-Government adoption and utilisation requires considerations and factors over and above those involved in such theories and models.

- This research identifies and proposes salient factors that influence users' adoption and utilisation of e-Government systems and services. This involves factors that have not been considered previously in e-Government adoption studies.

- This research develops a conceptual model for analysing e-Government adoption and utilisation, which is one of the least studied aspects of e-Government.

- This research contributes to investigating and understanding the factors that influence the adoption and utilisation of different types of users who use e-Government systems and services. Those users are:

    - The citizens who use e-Government services for their personal government transactions.

    - The users from the business sector who use e-Government services and transactions for their own business or the firms that they work for.

    - The government employees who are involved in processing and delivering the customers' transactions.

- This research methodology and design is also another contribution especially in the field of e-Government. Analysing data that is derived and collected from actual potential and diverse users based on a systematic framework and from different places in the targeted context helped this research to achieve its objectives. The research instruments (questionnaires) involved different items that measure significant aspects of the proposed factors to assess their influence on the targeted users. Moreover, the use of multiple methods for data collection (quantitative and qualitative) supported the significance of the research results and added a distinctive aspect to this research. Furthermore, targeting different types of e-Government users represents the holistic approach that this research aims for. The methodology of this research aimed to analyse and understand the adoption and utilisation from the customers' side (citizens and users from the business sector) which is fundamental for e-Government success. It also aimed to understand the adoption and

utilisation from the provider side (government employees) which is one of the least studied aspects in the e-Government literature particularly in the developing countries. This lends further significance to this research as a distinct contribution to the field.

- The revised model presented in Chapter 8 can be used by government departments, e-Services and e-Transactions providers, researchers and practitioners to understand the most significant factors that influence the adoption and use of e-Government from different perspectives. This may contribute to increasing the adoption and usage level, as well as developing and implementing new electronic systems and services more successfully based on the users' needs, perceptions and expectations.

- This research develops practical recommendations based on the findings. These recommendations can serve as guidance for e-Services and e-Transactions providers and e-Government practitioners to enhance the implemented e-Services as well as to implement new e-Services.

- Based on the aforementioned contributions, this research provides a great insight into the e-Government context in Saudi Arabia as it addressed several country-specific and culture-specific aspects when analysing the influence of the proposed factors. Moreover, such contributions make this research a pioneer research in the area of e-Government especially in developing countries and countries within the same region such as the Gulf countries, since such countries have many similarities with the context of Saudi Arabia in terms of culture, traditions, environment and infrastructure.

1.7 The Thesis Outline

This section provides the sequence and brief description of the thesis chapters as follows:

Chapter One: This chapter provides an overview of the research context and defines the research problem. Furthermore, it presents the objectives and aims of this research. It also presents the research questions and the research phases. A brief list of the research contributions is also presented in this chapter.

Chapter Two: This chapter provides a literature review on e-Government. This includes a background, definition, domains and maturity levels of e-Government. It also presents the benefits and challenges of implementing e-Government systems and services. It then discusses e-Government status in different developed and developing countries including e-Government in Saudi Arabia. This chapter also reviews a number of theories and models that are related to technology acceptance and adoption analysis including the Theory of Reasoned Action (TRA), Technology Acceptance Model (TAM), the Diffusion of Innovation (DOI) theory. The Perceived Characteristics Innovation (PCI) model and the Unified Theory of Acceptance and Use Technology model (UTAUT).

Chapter Three: This chapter presents the conceptual framework, which is the E-Government Adoption and Utilisation Model that is developed in this research. It provides a critical review of the models and theories that are commonly used in e-Government adoption literature. This chapter also identifies and explains the key constructs and factors of the proposed framework (EGAUM) alongside the research hypotheses.

Chapter Four: This chapter discusses the adopted research methodology. It explains and justifies the research design, the research philosophy, the research approach, the research strategy, the research method and the data collection techniques. It also discusses the analysis procedures that are performed in this research.

Chapter Five: This chapter presents and analyses the data that has been collected from the Saudi citizens. Two analysis sections are involved in this chapter which are a descriptive and a statistical analysis. This chapter also discusses the findings and assesses the research hypotheses from the citizens' perspective. It concludes with a summary of the most significant factors that influence citizens' adoption and use.

Chapter Six: This chapter presents and analyses the data that has been collected from the government employees. Similar to Chapter five, two analysis sections are involved in this chapter which are the descriptive and the statistical analyses. This chapter also discusses the findings and assesses the research hypotheses from the public employees' perspective. It concludes with a summary of the most significant factors that influence the employees' adoption and use.

Chapter Seven: This chapter presents and analyses the data that has been collected from the business sector users. The findings from the descriptive and statistical analyses are presented and discussed in this chapter. The research hypotheses are assessed from the business sector perspective. This chapter summarizes the most significant factors that influence the adoption and use of users from the Saudi business sector.

Chapter Eight: This chapter provides an overview of the whole research, demonstrating and summarising the purpose and outcome of each chapter. It also presents the resulting recommendations. The research contribution is also be presented and discussed as well as the research limitations and the directions for future work.

Chapter Two: Literature Review

2.1 Introduction

This chapter intends to provide a literature review on the subject. At first, a background on e-Government will be presented (Section 2.2). Then the term 'e-Government' will be defined (Section 2.3), then the drivers and domains of e-Government will be introduced in Section 2.4, which includes four main domains: Government to Government, Government to Business, Government to Citizens and Government to Employees. Moreover, e-Government implementation levels will be reviewed and discussed in Section 2.5. Then, Section 2.6 presents the objectives and benefits of implementing e-Government systems and services and Section 2.7 addresses the challenges and barriers that are facing the implementation, adoption and utilisation of e-Government. The e-Government implementations in developed and developing countries will be reviewed and discussed in Section 2.8, including some examples of e-Government situations from different countries. Since the context of this research is the Kingdom of Saudi Arabia, Section 2.9 will provide an overview of the kingdom and will also provide an overview and discussion of the Saudi e-Government program (Yesser). The e-Government adoption and utilisation, which is the focus of this research, will be defined and discussed in Section 2.10. A number of technology acceptance models and theories will be presented in Section 2.11. Finally, Section 2.12 will review and discuss several studies and research that have been conducted in the e-Government adoption and utilisation literature in different contexts.

2.2 E-Government background

The use of Internet and information technologies has revolutionized the lifestyles of people, and the rapid growth of this use has created more information societies around the world. When the US Department of Defence invented the Internet in the 1960s for defence research purposes, no one could predict the revolution that it would cause a few decades later (Ho, 2002; Beranek, 2007). Today, the Internet is a major part of the daily life of many people. The Internet has been widely utilised and adopted in the field of commerce, leading to e-Commerce becoming a method for selling and buying products and services online. The scope of E-Commerce has been subsequently extended to improve the practices and processes in business, and the introduction of e-Business into the business sector. These rapid technological changes and developments that have occurred in the business sector encouraged the public sector to consider including technologies in its administrations and communications. The public sector began to examine how the new technologies could be implemented and how it could be transformed from

a paper-based sector to an electronic-based sector. The first use of the Internet technology in government was in the early 1990s when electronic mail and the World Wide Web were used to provide information and services (Ho 2002). The preliminary stages of government online initiatives during the 1990s focused on providing and disseminating information over the Internet which led to the creation of many websites that provide static information (OECD, 2005). This initial use of the Internet in public sector was the development of Web-based services by the end of 1990s. E-Services then became an integral and significant part of electronic government (e-Government) offering improved electronic interactions between government and stakeholders (Ho, 2002).

2.3 Definition of e-Government

The term e-Government (also called E-Governance or Online Government) emerged in the 1990s (Anttiroiko & Malkia, 2007). Since then, the field e-Government has grown considerably and this offered opportunities for research and provided scientific content (Grönlund & Horan, 2005). The term e-Government has been variously defined in the literature. For example, Kitaw (2006) defined it as "*the use of ICTs to promote more efficient and effective government, facilitate access to government services, allow greater public access to information, and make governments more accountable to citizens*". Furthermore, e-Government can be defined as "*the use by government agencies of information technologies (such as Wide Area Networks, the Internet, and mobile computing) that have the ability to transform relations with citizens, businesses, and other arms of government"* (World Bank, n.d.).

Additionally, the United Nations (UN) defined e-Government as *"The employment of the Internet and the world-wide-web for delivering government information and services to the citizens"* (2001). It is mentioned recently in their report that e-Government can be an engine of development for the people (UN, 2012). However, some definitions are not comprehensive in terms of describing the meaning of the electronic government. Furthermore, many definitions refer only to providing online services (E-Services) to citizens where in fact e-Government is broader and more comprehensive than that. In addition to providing E-Services to customers (citizens) and facilitating access to the information provided by government, e-Government also increases the level of participation which is of positive benefit to citizens. It also creates multiple and flexible communication channels between the government and citizens, in order to enhance the relationship between them.

Moreover, e-Government can refer to the use of ICTs to facilitate the communication between government departments at different levels in order to exchange data and information. This in

turn leads to providing integrated services that need data from different governmental agencies. For example, a citizen does not need to inform different agencies when he/she changes home address, as such information can be spread and transferred between these agencies when the address is changed in one of them.

According to Alateyah et al., defining e-Government from a single perspective is easy, but to define it from a general view is relatively difficult (Alateyah et al., 2012). However, we can conclude with a relatively comprehensive definition for e-Government. It is the utilisation of various Information and Communication Technologies (ICTs) for facilitating the communication between government and stakeholders (citizens, business and governmental agencies); providing effective, efficient and integrated e-Services and enhancing the relationship between the government and stakeholders.

2.4 E-government drivers and domains

E-Government drivers are still discussed in the literature (Alateyah et al., 2012). This is because different researchers see Electronic Government from different angles. Most of the researchers, such as Seifert (2003) and Sang & Lee (2009) categorised e-Government into three main types. They classified it as Government to Government (G2G), Government to Business (G2B) and Government to Citizen (G2C). Other researchers added a fourth category, which is Government to Employees (G2E) (Alghamdi et al., 2011; Ndou, 2004). Each category can be defined as follows:

2.4.1 Government to Government (G2G)

G2G refers to the integration of internal systems and procedures into a central system and it is considered the backbone of e-Government. The aim of this domain is to facilitate the collaboration and coordination of the internal processes within governments (organisations and agencies) (Seifert, 2003). Sang & Lee stated that it is crucial to develop G2G in order to implement successful e-Government, since it influences the usage of the system as a whole (2009). Many researchers support this point since it is logical that government must enhance and improve their internal e-Processes before providing e-Service to the citizens.

There are certain forces that arguably are strongly motivating the implementation of G2G. According to Seifert (2003), legislation is one of these forces, where a variety of laws and regulations contribute to the implementation of e-Government. In the US for example, some Acts can be mentioned in this regard, such as the Paperwork Reduction Act (PRA) and the Government Paperwork Elimination Act (GPEA), that are concerned with reducing the required

information and reports collected by government agencies, as well as introducing any technologies needed to substitute paperwork with electronic documents. An interest in improving efficiency is another force for G2G. Implementing information technologies successfully inside government agencies will reduce costs and the number of required tasks, increase the speed of transactions and enhance the consistency of outcomes.

2.4.2 Government to Business (G2B)

G2B occurs when there are electronic interactions between government agencies and the business sector. The primary goal of implementing G2B is for the government agencies to use electronic methods to interact with business sector and satisfy their service needs (Joseph 2009). By implementing e-Government systems, government agencies can facilitate the delivery of and ease of access to information and services to the business sector (Al-zoubi & Lip-Sam, 2011). The implementation of G2B has many advantages for both government and business sector. Awan (2007) states that G2B saves businesses the time, effort and money spent to comply with rules and regulations. DeBenedictis et al., (2002) state more advantages, which are providing information in one easy accessible location, streamlining requirements, simplifying procedures, lowering the number of the required forms, making transactions easier and helping business understand what regulations apply to them and how to comply with them. Significant attention has been paid to G2B due to several factors, such as the enthusiasm of the business sector and the tendency to cost and effort reduction. The G2B sector also involves the sale of surplus government goods to the public; and purchasing goods and services for governmental agencies (Seifert, 2003).

The literature mentions several motivating forces for implementing G2B as a type of e-Government. One of these forces is the business community itself, since many industries nowadays rely heavily on electronic means for purchasing and selling goods and services. Therefore, G2B enables businesses to interact, communicate and transact with the government agencies easily and effectively (Mutula, 2012). Another motivating force is the need for cost cutting and also the need for enhancing the efficiency of purchasing activities (Seifert, 2003). G2B initiatives have a significant potential for both governments and businesses since they can save effort and costs. Moreover, they open new channels for the interaction between governments and business.

2.4.3 Government to Citizens (G2C)

G2C refers to the dealings and interaction between government and citizens over an online medium (DeBenedictis et al., 2002). G2C e-Government is designed to facilitate the interaction between government and citizens, which therefore enhances the relationship between them.

Many researchers indicated that G2C is the primary goal of implementing e-Government (Seifert, 2003).

Interests in G2C are derived from several motivational forces, such as citizens' demands, reducing time consumption and reducing costs and effort. There are many examples of G2C initiatives to provide e-Services such as GOV.UK in the United Kingdom. This website was created by the government digital service. The aim of this website was to replace the individual websites of the government agencies and bodies to provide e-Services in a form of a one-stop-shop. This governmental website provides a range of world-class digital services used by millions of people in the UK and abroad (Government of the United Kingdom, n.d.). G2C is considered the fundamental element in e-Government systems since it involves the largest number of stakeholders (citizens); and thus the successful implementation of G2C as an e-Government has a crucial impact on several aspects. Some research and studies in this regard have been conducted and this area of research remains of interest in the literature.

2.4.4 Government to Employees (G2E)

G2E aims to cultivate and develop Information Technology (IT) capability among government employees to deliver efficient and effective services. It refers to the relationship (activities and tasks) between government agencies and their employees (Mutula, 2012). G2E is an effective way to provide e-Learning and knowledge sharing environment to employees. It also gives them the ability to access information about compensation, training and learning opportunities, benefits policies and civil right laws (Ndou, 2004). G2E can dramatically enhance the implementation of e-Government in general. It also plays a part in cultivating ICT skills among government employees in order to make their tasks and work more valuable.

Siau & Long (2005) outline these domains (See Figure 2.1). Furthermore, they illustrate the relationships between the four main domains of e-Government and describe the objectives and activities of each domain as well as its relationship to the other domains (See Figure 2.2 below).

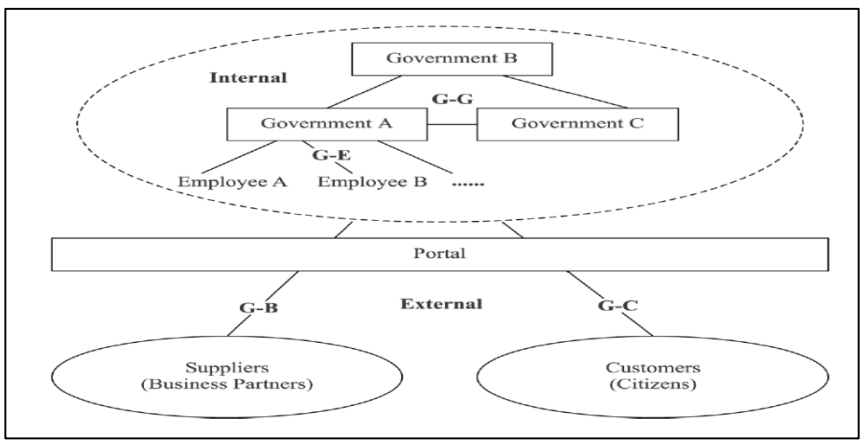


Figure 2.1: E-Government four domains (Siau & Long, 2005) (see appendix G for larger figure).

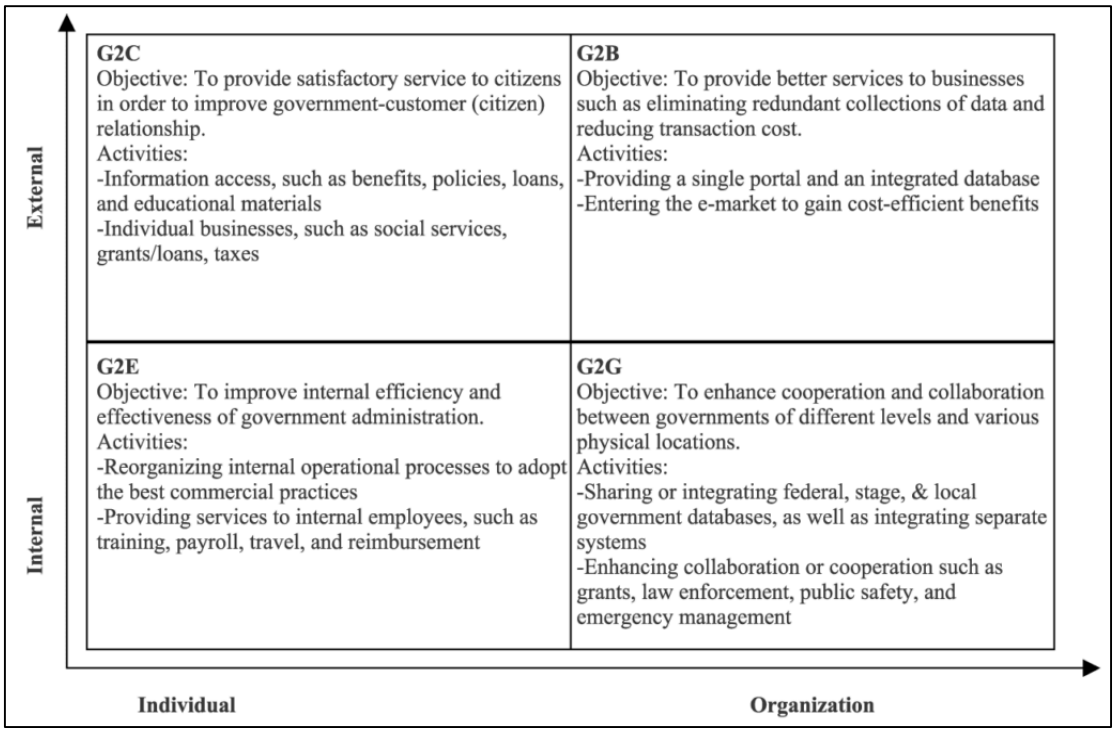


Figure 2.2: Objectives and relationships of e-Government domains (Siau & Long, 2005) (see appendix G for larger figure).

Other e-Government domains have been mentioned in the literature. For example, Yildiz (2007) identified two more domains of implementing e-Government; firstly, Government to Civil Society Organisations (G2CS), which refers to activities between government and civil society organisations which may join forces in certain circumstances. For example, G2SC can facilitate communication and coordination after disasters. Secondly, Citizen to Citizen (C2C), which refers to the implementation of electronic discussion groups on civic issues. Both categories are considered as important parts of implementing successful e-Governance, since they enhance the forms of e-Participation and e-Coordination.

2.5 E-Government levels

E-Government levels (also called stage models or phase models) refer to the phases of implementing e-Government systems. Different approaches have been introduced in the literature for determining e-Government levels (Aladawi et al., 2005). The aim of these approaches is to measure the progress of implementing e-Government initiatives and to establish a road map to accomplish the desired goals. These models also serve as a reference to position where the project fits into the whole e-Government strategy. The models' phases neither depend on each other, nor need one phase be completed to begin another. They

conceptually offer a way to evaluate the process of e-Government and also to indicate the system's maturity (Al-Hashmi & Darem, 2008).

One of the most-used models is Gartner's four phases model (Zarei et al., 2008; Al-Hashmi & Darem, 2008). This model classifies the maturity of e-Government into four phases (as shown in Figure 2.3). A brief explanation of each phase is also presented below:

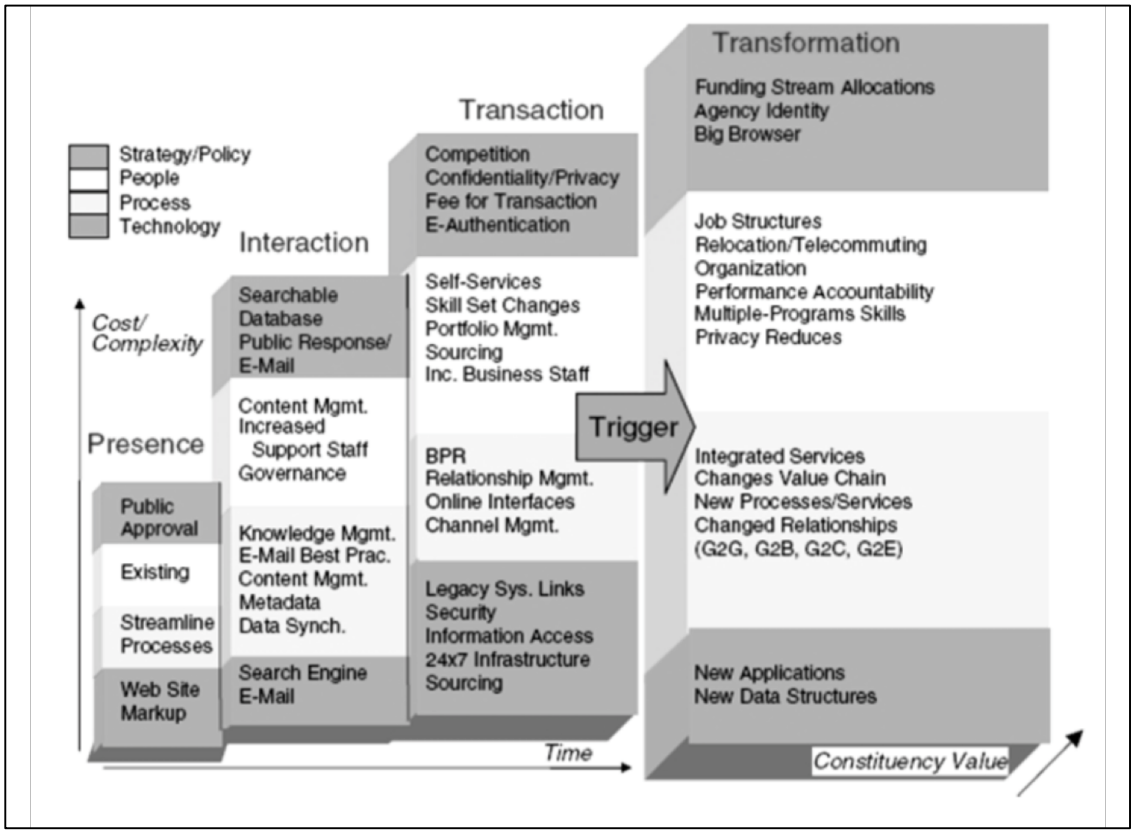


Figure 2.3: Gartner's e-Government stages model (Zarei et al., 2008; Al-Hashmi & Darem, 2008) (see appendix G for larger figure).

1. Publishing (Web Presence): This is considered the earliest stage, where static information is published, i.e. a simple information-providing website of a passive nature. It is sometimes described as a 'brochure' since it provides the same function as a paper brochure (Al-Hashmi & Darem, 2008).

2. Interaction: This phase goes one step further by improving the functionality of e-Government systems (Aladawi et al., 2005). In this phase, simple interactions between G2G, G2B and G2C are provided such as providing e-mail contacts and interactive forms that generate informational responses (Al-Hashmi & Darem, 2008).

3. Transaction: In this phase, full-featured online services emerge, where citizens can conduct online transactions completely. The transaction phase usually involves payment activities such as paying taxes or fees, paying for licence renewal or submitting bids for procurement contracts (Al-Hashmi & Darem, 2008).

4. Transformation: Aladawi et al. (2005) describes this phase as the long-term goal of any e-Government systems. This phase involves reinvention of how government functions are organized and conceived. All government information systems are integrated to represent one virtual centre.

Many other phase models have been introduced in the literature. For example, the United Nations (UN) developed a five-stage model that involves: Emerging, which refers to websites with basic information; Enhancing, which refers to dynamic information and contents; Interactive, which refers to electronic interaction; Transactional, which involves payments and finally Seamless, which refers to full integration across government agencies (2001).

On the other hand, Layne & Lee (2001) suggest another e-Government phase model with four stages. They propose a 'stages of growth' model that outlines the multi-perspective transformation within government structure as these stages make the transition into e-Government in each stage. Based on technical, organisational and managerial feasibilities, Layne and Lee presented their four-stage model in two dimensions as follows (Figure 2.4):

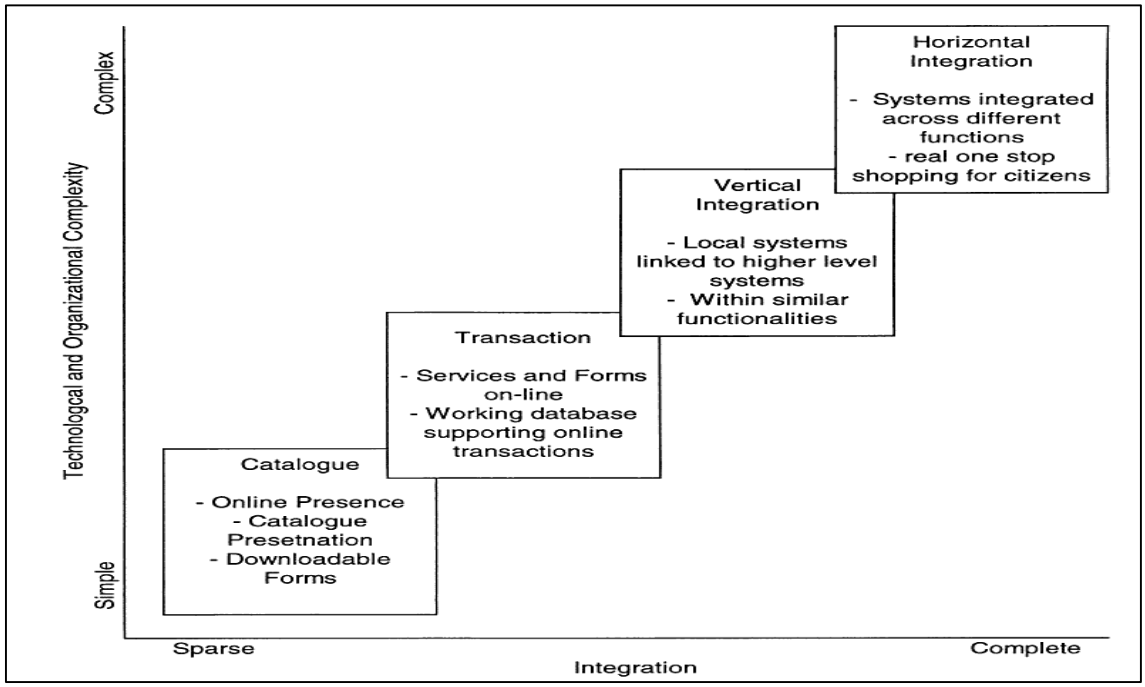


Figure 2.4: Layne and Lee's Four Stages Model (Layne & Lee, 2001).

Most of the e-Government level models in the literature focus mainly on technical perspectives to assess the e-Government maturity levels. Although assessing the maturity of e-Government systems from a technical aspect is fundamental and significant, a citizen-centric perspective is also crucial in order to measure the success and maturity of such systems. Al-Khatib (2009), states that there is a lack of citizen-oriented maturity models that determine the users' activities, participation and engagement levels. Thus, the following six phases are suggested in this

research to provide a simple and comprehensive model of maturity levels that considers users' activities at each level. These phases are presented as follows:

1. **Web presence:** This level indicates whether the governmental agency has a website that contains static information which customers can access, such as the process of applying for a governmental service. See Figure 2.5 below:

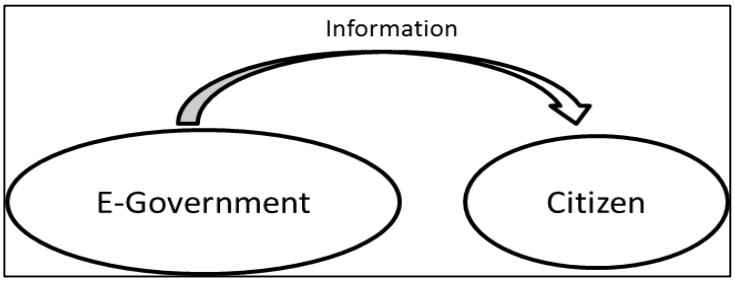


Figure 2.5: Website presence level (providing information)

2. **One-way interaction**: This level indicates that customers can communicate with the government but in one direction; such as in offline forms, where customers can fill in the form and then send it to the government agency online through their website or by email. See Figure 2.6 below:

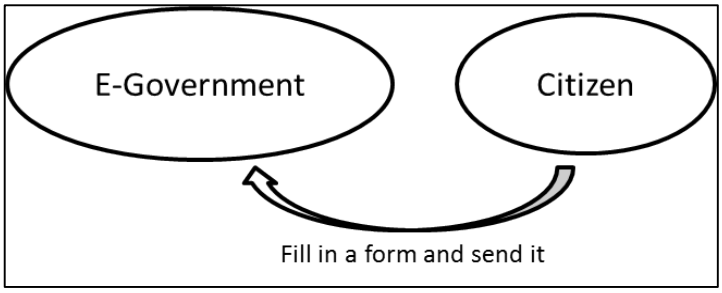


Figure 2.6: One-way interaction level

3. **Two-way interaction**: This level indicates that customers can apply for online services, such as filling online forms, and also receive the reply online. This level is considered as the true start of e-Government. See Figure 2.7 below:

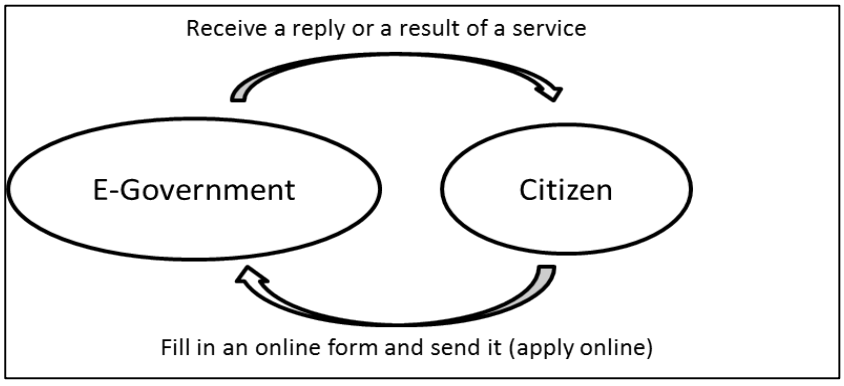


Figure 2.7: Two-way interaction level

4. **Transaction**: This level is considered as a two-way interaction. By completing a transaction, the customers' record will be modified accordingly. Usually this level involves a payment (e-Payment). See Figure 2.8 below:

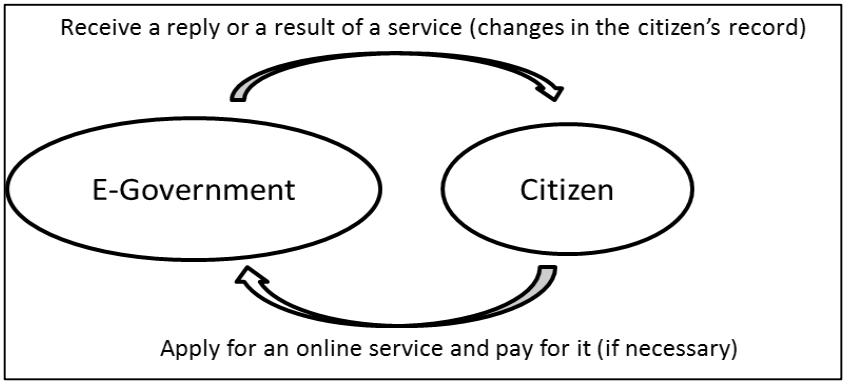


Figure 2.8: Transaction level

5. **Integration**: This level indicates that customers can apply for an online service which needs information and data from different government agencies. Moreover, the customers' records will be modified in all of these agencies accordingly. See Figure 2.9 below:

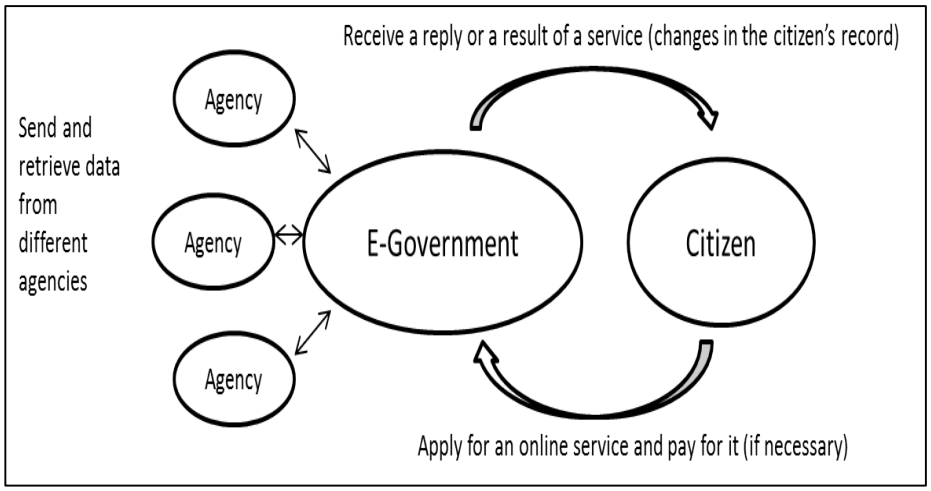


Figure 2.9: Interaction level

6. **E-Engagement**: This phase is a long-term goal of implementing e-Government. It involves e-Democracy and e-Participation domains where customers can participate in making decisions such as e-Voting and e-Polling for government executive members. Besides the ability to conduct many e-Services that are implemented in the previous stages, customers can also evaluate and assessing the quality of the agencies' performance and projects in the form of e-Evaluation and e-Assessment. Forums, blogs and e-Society groups can be implemented online to enable customers to communicate with each other. See Figure 2.10 below:

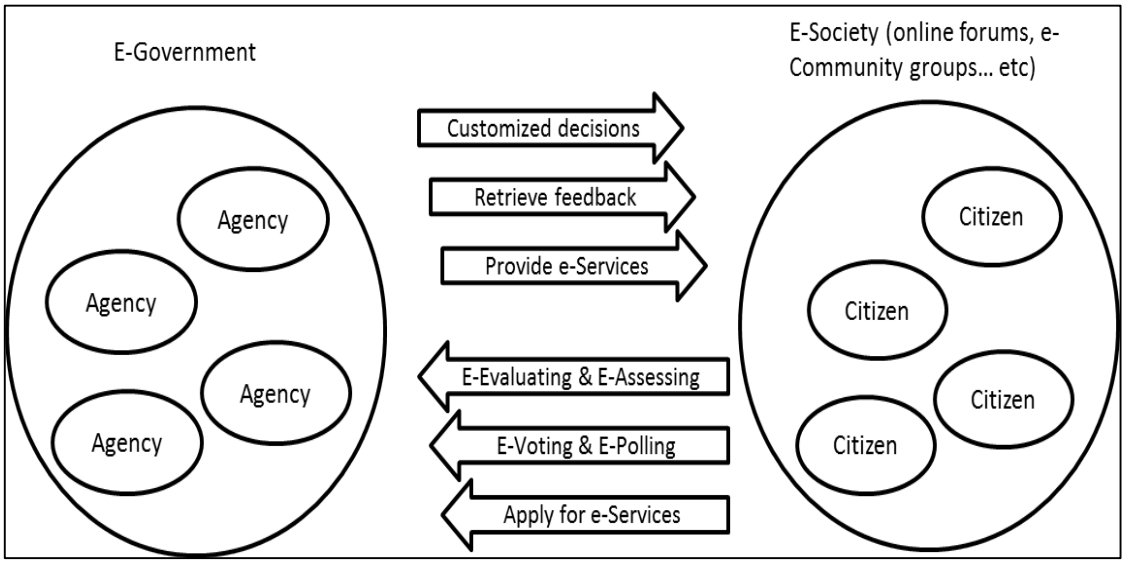


Figure 2.10: E-Engagement level

Implementing e-Government is not straightforward process; in fact it goes through several levels and stages. The success of e-Government can be measured by identifying the level attained. As shown in the phases and figures above, implementing a successful e-Government is a time-consuming process but when it is well-implemented, many goals and significant improvements may be achieved.

2.6 The objectives and benefits of implementing e-Government

According to the Information Society Commission (2003), e-Government is not only an automation of government services and the dissemination of public information online, but is a fundamental transformation of government, technology and administrative processes that significantly changes the way of providing services and information to stakeholders. Al-Sabti, who was the Saudi e-Government program director, stated that "E-Government is the major vehicle for transforming the public sector to the information society" (Al-Sabti, 2005). Building an Information Society will facilitate the process of providing e-Services and help to move towards decentralization. Moreover, it will also increase interaction and participation levels.

There is increasing recognition of the benefits and potentials of implementing e-Government. E-Government provides higher productivity in terms of reducing cost, time and effort. It also has the ability to ensure greater engagement with users; and offers more efficient administrative procedures, higher quality services and better policy outcomes. In addition to these direct benefits, e-Government has also indirect potentials such as better transparency and accountability in terms of decision-making, stimulating economies and developing democracy (Information Society Commission, 2003). The benefits of implementing e-Government that are stated in the literature are presented below:

- Delivering electronic and integrated public services online to customers, including public citizens and the business sector, through electronic and online methods that are available 24 hours a day, seven days a week. This will save costs and reduce travel and waiting time. (Reffat, 2006; Reynolds & Regio, 2001 and Aladawi et al, 2005).

- Online services provided by e-Government are cheaper than providing services through traditional means as they save money on printing, sorting and mailing (Warkentin et al, 2002).

- Transforming, improving and rebuilding the relationship between government and users (citizens and other beneficiaries) by providing value-added and personalized services to them. Rather than providing unified services to all customers, the government can use technology, in the form of e-Government, to treat users as individuals and provide personalized services which enhance the users' trust and confidence levels. (Weerakkody & Dhillon, 2008; Reynolds & Regio, 2001).

- Strengthening accountability and transparency of government operations (Aladawi et al, 2005).

- Facilitating communication and improving the coordination and cooperation amongst different government agencies.

- Providing new and improving existing services, based on users' needs.

- Simplifying processes, reducing costs, enhancing research capabilities and improving documentation and record-keeping (Gebba & Zakaria, 2012).

- Bridging the digital divide which will help the government offer the same type of information and services to all users equally (Huang, 2007).

- Facilitating the access to policy information which will promote users' empowerment and enable them to participate in decision-making (Fuchs, 2006).

- Enhancing economic and offering opportunities for businesses to expand.

- Creating more forms of participation by encouraging and providing online debates, exchanging information and e-Voting (Davison et al., 2005).

- Introducing several efficient payment methods which give users an easy option to conduct government transactions online.

- A transformation of governance which will improve processes and reduce systematic corruption (Abanumy et al, 2003; Reynolds & Regio, 2001).

- Reforming bureaucracy and increasing democracy level (e-Democracy) within the government; and improve the relationship between beneficiaries and government and the level of trust (Alateyah et al, 2012).

As shown above, e-Government can have a fundamental influence on the users' quality of life and the relationship between them and their governments. Successful e-Government can achieve higher levels of user satisfaction and confidence, which will be reflected on the community and social unity. Some of these benefits, such as saving costs and time, can be accomplished in the short-term when implementing e-Government; and some of them, such as reforming bureaucracy, can be achieved in the long-term. Therefore, understanding the factors that influence the adoption, implementation and utilisation of e-Government is very important if these benefits are to be achieved.

2.7 E-Government challenges and barriers

Establishing an E-Government system is identified as one of the top priorities for governments across the world; since 179 out of 192 United Nations (UN) members reported that they developed strategies to implement these systems (UN, 2008). They represent a fundamental change in the public sector structure, culture, value and the way of conducting services by utilising Information and Communication Technologies (ICTs). Recently, governments in the Middle East started using e-Government and the Kingdom of Saudi Arabia, as a Middle Eastern country, is in the process of transition to e-Government. Today, most Saudi agencies have their own websites to provide either basic information or some e-Services. Most of these e-Services and information are inefficient due to the limitation of implementation or the lack of utilisation. Moreover, some of them are not updated on a regular basis (Alshehri & Drew, 2010).

Unlike the case of developed countries, research and studies that investigate and analyse the implementation and utilisation of e-Government in developing countries are limited. Few studies have been conducted into e-Government adoption, utilisation, e-Usage and e-Engagement in many such countries in general, and in the Arab countries such as Saudi Arabia in particular (Alateyah et al, 2012; Gebba & Zakaria, 2012 and Alsaghier et al, 2009). Therefore, the lack of studies that explore and analyse the implementation of e-Government from different perspectives in developing countries is considered a very important challenge that needs to be addressed. Furthermore, the lack of adoption and use of the e-Services provided by e-Government is problematic, even if some of these e-Services are implemented well. Implementing a huge national system like e-Government requires a large amount of effort and

cost; so not being adopted and utilised by users as expected is a disaster. Beside the challenge of lack of e-Usage, other important challenges and barriers to implementing e-Government that are stated in the literature are presented in the following section:

2.7.1 Technical challenges and barriers:

2.7.1.1 Information and Communication Technology (ICT) infrastructure

To implement successful e-Government system in a country, the ICT infrastructure must be good enough to implement such a system, since ICTs are the backbone of e-Government (Al-Sobhi & Weerakkody, 2010; Chen et al., 2006). This technical challenge includes many aspects, such as the shortage of a reliable network, difficulties in Internet access, the incompatibility and complexity of the existing systems and the limitations of integration technologies for different databases (Ebrahim & Irani, 2005).

2.7.1.2 Privacy and security issues

Privacy and security issues are an on-going challenge and risk in most IT projects; and in terms of e-Government, the challenge is escalating, since e-Government systems are dealing with high priority information and holding public data. Thus, governments need to incorporate the most advanced security approaches and technologies. This is considered as a very important challenge that needs to be addressed, especially in developing countries due to poor ICT infrastructure and a lack of knowledge about security risks and consequences (Ebrahim & Irani, 2005; Chanchary & Islam, 2011).

2.7.1.3 Website design

E-Government websites represent the intermediary tool that enables government to provide e-Services and users to conduct e-Services transactions. Therefore, many important aspects need to be taken into account when designing e-Government websites, such as web content, web appearance, features of the website and ease of use. These aspects need to be tailored and customized depending on the users' needs (Alshehri et al., 2012).

2.7.2 Organisational and governmental challenges and barriers:

2.7.2.1 *Lack of strategic planning, policies and regulations*

Many developing countries do not implement their e-Government systems according to their situation and conditions. Due to the pressure and demands from citizens and other stakeholders to implement e-Government services in developing countries, many governments in these countries follow the successful experiences of implementing e-Government in developed

countries without taking into account that there are many differences between developed and developing countries (Chen et al., 2006). This has led to implementing e-Government without developing appropriate and customized strategic plans, policies and regulations that are suitable for developing countries, and which should depend on their conditions and situation (Alshehri & Drew, 2010).

2.7.2.2 *Lack of qualified personnel*

This involves the lack of knowledge regarding e-Government implementation. Many employees in government agencies are not qualified and do not have enough skills to implement huge systems like e-Government. The qualified personnel that are needed for this include technical, regulation, management, administration and analysis specialists (Ebrahim & Irani, 2005).

2.7.2.3 Lack of partnership and coordination

This involves the lack of partnership with the private sector to seek higher quality tools and workers. Moreover, it involves the lack of coordination and collaboration between different government agencies. Sharing information, experiences and plans between organisations is a crucial phase in implementing successful e-Government (Alshehri & Drew, 2010).

2.7.2.4 Lack of promotion programs

There is a lack of programs and means that promote and show the benefits and advantages of using e-Government services. These constitute an advertising process that can increase the usage of e-government services as well as establishing an awareness of the potentials and advantages that e-Government can offer (Alshehri & Drew, 2010).

2.7.2.5 Low e-Services quality

Although many governments in developing countries provide some e-Government services, these services do not satisfy the stakeholders, who are the main intended target of implementing such e-Services. This is due to several reasons such as the quality, the outcomes and the speed of performing and processing the e-Services (AlNuaim, 2011; Alateyah et al., 2013; Rehman et al., 2012).

2.7.2.6 Lack of common and needed services

Many e-Government systems in developing countries do not include the most commonly and highly required services such as applying for ID cards and conducting services related to estates and property (Al-Nuaim, 2011; Al-Sobhi & Weerakkody, 2010).

2.7.2.7 Lack of delivery options

Many developing countries, including the Kingdom of Saudi Arabia, suffer from poor delivery system, such as the postal service. Although the main goal of implementing e-Government systems is to conduct and deliver government services electronically, some services need to include hardcopies of some documents such as driving licenses and passports which require an efficient and reliable delivery service. This problem may be a challenge to the success of e-Government.

2.7.2.8 Operational cost and funding

The cost of hiring IT professionals and consultants is relatively high in general; and the cost is even higher in developing countries, due to the lack of IT proficiency. Moreover, the main demand for e-Government comes from government organisations which do not have, in some developing countries, sufficient financial resources. Even if the financial resources are high in some developing countries, they may suffer from ineffective funding plans (Ebrahim & Irani, 2005).

2.7.2.9 E-Payment options

Paying for e-Services online is still limited in many developing countries. There is a shortage of e-Payment options that enable users to pay for transactions with government online (Gebba & Zakaria, 2012).

2.7.3 Social and cultural challenges and barriers:

We divide this kind of challenge into two sections to allow for more detail. Firstly, there are internal challenges that represent issues related to social and cultural aspects internally within the government organisations. Secondly, there are external challenges that represent social and cultural issues amongst citizens and societies. These sets of challenges are considered to be the main barriers for implementing successful e-Government and making it more utilised. Feng emphasized that the main barrier to the implementation and utilisation of e-Government systems are not mainly technical, but the cultural and behaviour implications of the new technology (2003). It is also reported that individual attitude and organisational culture can be considered complex challenges in adopting new technologies particularly with e-Government systems, since such systems need strong cooperation between the provider (the government) and the users (citizens and other users) to be adopted and utilised successfully (Alshehri & Drew, 2010).

2.7.3.1 Internal challenges (within the government):

- *Resistance to changing to electronic means*

E-Government is still a new phenomenon in most developing countries; thus, resistance to changes in the government work processes from traditional means to electronic ones is likely to be high. This is because of several reasons, including the fear of job loss and an unwillingness to learn new skills, since computer illiteracy is relatively high in some government organisations.

- *Leaders and management support*

Top management support is another important factor in the implementation of e-Government. It refers to the commitment from top management and leaders to provide a positive environment that encourages participation in e-Government development (Alshehri & Drew, 2010). Many top managers and leaders in government organisations are elderly, which may be an explanation of their resistance to transition to electronic processes.

- *The existence of bureaucracy*

Inflexibility about modifying the workflow in an improved and enhanced way that is compatible with the transition to e-Government is considered a challenge to its successful implementation. This bureaucratic reaction is caused by several factors, including the complexity of regulations and the lack of integration between government organisations, as well as the fear of change, the existence of multiple auditing bodies and overlapping authority among government bodies (Gebba & Zakaria, 2012).

- *Not considering the users' satisfaction*

User satisfaction is a significant element in the success of e-Government. Identifying and fulfilling the stakeholders' needs and demands when implementing and developing e-Government systems will help to increase the adoption and use of such systems. Many organisations in developing countries do not take users' feedback on e-Government seriously and therefore, e-Government is likely to fail since it is not implemented in accordance with the targeted stakeholders' needs. Many government officers do not place e-Government at a high priority; and this is because of limited knowledge about the benefits of successful e-Government and the belief that e-Government is not a vital transition (Chen et al, 2006).

2.7.3.2 External challenges:

- *Social influence*

In most developing countries the extended family and peer group exert a powerful influence; thus, they can affect each others' behaviour in terms of using new technologies. Any individual decision can be strongly affected by the experience of relatives, family members and friends. If the experience of using e-Government services for an individual was successful and useful, this would be likely to reflect positively on their relatives and friends since he/she would encourage them to use such services. On the other hand, if obtaining and using e-Services was frustrating and not satisfactory, it would be likely to reflect negatively on its usage by relatives and friends.

- *Background of using technology and e-usage*

Although the technology industry is growing fast in many developing countries, it is still believed that digital technologies are not reliable or efficient for used in primary activities with government and businesses. Since e-Commerce is also new to some developing countries, this has an implication for using e-Government as e-Business and e-Commerce are considered a pre-condition to adopting e-Government systems. Therefore, the user's background in using technologies such as the Internet (e-Usage) in successfully accessing services and completing transactions is a factor in the adoption and use of e-Government.

- *Language*

Gebba & Zakaria stated that the dominance of the English language in electronic content development is considered a challenge for implementing e-Government in some developing countries, and in the Arab countries in particular (2012).

- *Education level*

The user's education level can be a barrier to acceptance and use of e-Government systems. Low experience and computer illiteracy rates in some developing countries could lead to not using such systems (Gebba & Zakaria, 2012).

- *Trust in the Internet*

Due to lack of background in and low experience of using the Internet for primary activities in everyday life, many citizens in developing countries are reluctant to trust online services (Chen et al, 2006). Perceived risk and perceived trust in using the Internet thus also have strong implications for implementing and adopting e-Government.

- *Face-to-face culture*

The traditional way of performing government services and transactions by visiting government agencies in person is still the dominant method in many developing countries. The culture of face-to-face dealings has a significant impact on the adoption and use of e-Government services, since many customers prefer to see immediate results of the e-Transactions that they preform (Rehman et al., 2012).

- *Connections (wasta)*

Wasta is an Arabic word meaning the use of personal connections to accelerate the process of transactions, which can involve queue jumping, or having exceptions made to the rules or the required documents when conducting government transactions. Since e-Government will limit such negative practice as services are treated electronically, some stakeholders may resist using e-Government and seek help from the personal connections instead.

As we can see from the above challenges and barriers, more research and studies need to be conducted to investigate and analyse these challenges further in order to explore strategies that can help to overcome these barriers and problems. Most of the studies and research in the literature focus on the technical side of the implementation of e-Government; however, the adoption and intention to use e-Government systems from different users' perspectives need to be studied deeply and treated carefully (Alshehri & Drew, 2010).

2.8 E-Government in developed and developing countries

This section reviews the e-Government systems and programs in several developed and developing countries. It starts by reviewing the differences between developed and developing countries; then reviews the e-Government implementation in a number of leading countries in terms of e-Government development; namely, The Republic of Korea, Singapore, the United Kingdom and Canada. The implementation of e-Government in a number of Arab countries adjacent to Saudi Arabia including Qatar, the United Arab Emirates, Jordan and Egypt is then evaluated. This provides an overview of the e-Government implementation in countries that have many similarities to the Kingdom of Saudi Arabia in different aspects including culture, environment and religion; and also helps to determine the differences between these countries and Saudi Arabia in terms of implementing e-Government. This section also discusses e-Government in Saudi Arabia, which is the context of this research. This section just reviews e-Government implementation in different countries, whereas the next section (Section 2.10) reviews and investigates the adoption and utilisation of e-Government in different countries.

E-Government has the potential to influence the lives of most of the world's population; therefore, it has become an important research area in the field of information technology. Most research on and strategies for implementing e-Government are based on the successful experiences of developed countries, which may not be applicable for other developing countries (Chen et al., 2006). Developed countries such as the United Sates, the United Kingdom and Canada are considered leaders in developing e-Government (Annual Global Accenture, 2002). There is a wide gap between the developed and developing countries in many aspects such as information technology infrastructure, practices and usage. Developing countries also lack sufficient knowledge and skills to develop appropriate practices and strategies for implementing e-Government. Chen's study presents some differences between developed and developing countries, as shown in the table below (Table 2.1):

Table 2.1: Differences between developed and developing countries (Chen et al., 2006)

	Developed countries	Developing countries
History and culture	• Government and economy developed early, immediately after independence • Relatively long history of democracy and more transparent government policy and rule	• Government usually not specifically defined; economy not increasing in productivity • Relatively short history of democracy and less transparent government policy and rule
Technical staff	• Has a current staff, needs to increase technical abilities and hire younger professionals • Has outsourcing abilities and financial resources to outsource; current staff would be able to define requirements for development	• Does not have a staff, or has very limited in house staff • Has limited outsourcing abilities and limited financial ability to outsource in some countries; current staff may be unable to define specific requirements
Infrastructure	• Good current infrastructure • High Internet access for employees and citizens	• Limited current infrastructure • Low Internet access for employees and citizens
Citizens	• High Internet access and computer literacy; still has digital divide and privacy issues • Relatively more experienced in democratic system and more actively participate in governmental policy-making process	• Low Internet access and citizens are reluctant to trust online services; few citizens still do not know how to operate computers • Relatively less experienced in democratic system and less active participation in governmental policy-making process
Government officers	• Decent computer literacy and dedication of resources; many do not place e-government at a high priority	• Low computer literacy and dedication of resources; many do not place e-government at a high priority due to lack of knowledge on the issue

State of economy	• Economy growing at a constant rate, productivity increasing, high standard of living • High economy state with variety of resources and large spend on developing technologies	• Economy not growing or increasing productivity; low standard of living • Limited economy state and relatively low spend on developing technologies in most countries

Due to a number of factors, there are wide differences among countries around the world in terms of their e-Government development status, as observed by the United Nations E-Government Survey involving 193 countries (UN, 2014). One of the UN survey observations was that income has an influence on e-Government development and that access to ICT infrastructure and providing an education that includes ICT literacy are related to the income of a nation. However, the report also stated that national income does not, by itself, guarantee the e-Government development of a country. Many countries have an advanced and developed e-Government despite their relatively low income. On the other hand, many other countries have high income but they are lagging behind in terms of e-Government development. The survey revealed that Republic of Korea was the top leader in e-Government development followed by Australia and then Singapore. Table 2.2 below shows the world and regional e-Government leaders.

Table 2.2: World and regional e-Government leaders (UN, 2014)

World e-government leaders	*Regional e-government leaders*	
Republic of Korea	AFRICA	Tunisia
Australia		Mauritius
Singapore	AMERICAS	United States of America
France		Canada
Netherlands	ASIA	Republic of Korea
Japan		Singapore
United States of America	EUROPE	France
United Kingdom		Netherlands
New Zealand	OCEANIA	Australia
Finland		New Zealand

In 2014, for the first time, all the UN member countries (193 countries) had a national website. However, the majority remain at the low and intermediate level in terms of e-Government development; as it can be difficult to move to a higher level of e-Government development even for countries with advanced ICT infrastructure and human resources. This is because high levels of e-Government development require robust data protection, enhanced payment systems and efficient data sharing between different government agencies. Other factors were also reported

as important in terms of e-Government development including citizens' engagement, adequate e-Government programmes, ICT infrastructure and education (UN, 2014).

In terms of e-Participation, there are several opportunities that can improve e-Participation, including the use of social media and mobile technologies. However, a number of challenges are facing e-Participation around the world, including the digital divide, low user take-up and lack of incentives to participate. The survey also revealed the leaders countries in terms of e-Participation ranking. The Netherlands was reported at the top of the list, followed by the Republic of Korea and then the Uruguay. Table 2.3 below presents the world and regional leaders in e-Participation:

Table 2.3: World and regional e-Participation leaders (UN, 2014)

World e-participation leaders	*Regional e-participation leaders*	
Netherlands	AFRICA	Morocco
Republic of Korea		Kenya
Uruguay	AMERICAS	Uruguay
France		Chile
Japan	ASIA	Republic of Korea
United Kingdom		Japan
Australia	EUROPE	Netherlands
Chile		France
United States of America	OCEANIA	Australia
Singapore		New Zealand

2.8.1 E-Government in the Republic of Korea

As reported in Tables 3 and 4, The Republic of Korea took the lead globally in e-Government ranking in 2010 and also in 2014, ahead of many other developed countries. The Republic of Korea has a developed telecommunications infrastructure, an educational policy that promotes ICT skills and a high gross domestic product (GDP) per person (UN, 2014). The Korean government launched its e-Government between 2001-2002 by carrying out 11 major initiatives for e-Government and enacting an e-Government Act. Between 2003 and 2007, it carried out 31 roadmap projects for e-Government which laid the groundwork for linking and integrating multiple agencies. From 2008 up to the present, it established a master plan for National Informatization and improved its e-Government based on the principle of openness, sharing and cooperation; and recently it initiated Smart government between 2011 and 2015 (NIA, n.d.). The Korean e-Government initiative has now achieved complete digital administration operations with advanced Government-to-Citizens and Government-to-Business services with multichannel communications and transactions.

2.8.2 E-Government in the Singapore

The foundation of an e-Government initiative in Singapore started with their Civil Service Computerisation Program, which focused on improving public administration by using ICTs (Singapore Government, n.d.). This foundation paved the way for the launch of the Singapore e-Government Action Plan between 2000 -2003, followed by the second Action Plan from 2003 to 2006. The first plan aimed to provide as many e-Services as possible and the second plan aimed to enhance the e-Services experience. Singapore then introduced the iGov2010 Masterplan between 2006 and 2010, which aimed to create an integrated e-Government that operated seamlessly and effectively to serve the customers and included the integration of mobile services. Building on the success of the previous plans, the eGov2015 Masterplan was introduced between 2010 and 2015. This plan aimed to facilitate more co-creation and interaction between the government, people and private sector, and focused on a "Government-with-you" approach rather than "Government-to-you". Now, Singapore is ranked third in the worldwide e-Government development list and one of the leaders in e-Participation (UN, 2014).

2.8.3 E-Government in the United Kingdom

The United Kingdom is one of the e-Government leaders around the world; and is among the top ten countries in terms of e-Government development and e-Participation (See Tables 3 and 4). The trend towards e-Government in the UK was established in the 90s. The early portal effort of the Government Information Services (GIS) was established in 1994 which was open.gov.uk. This portal was replaced with the initial website "UKonline" as a beta site in 2000 to gather feedback and in order to improve the site before the official launch in 2001. In 2004, this initial site was redesigned and rebuilt and rebranded as "Directgov". The UK's e-Government continued to develop until it reached to the current system GOV.UK, which appeared for the first time in 2011 and was then officially launched in 2012 with a full service (Fishenden, 2015). From 2000 onward, the UK's e-Government has been developed until it has reached one of the top positions globally.

2.8.4 E-Government in Canada

Canada's initial e-Government effort began in 1999 when the Government of Canada announced that information infrastructure was a priority. In 2001, a new website was launched in an effort to create a one stop shop environment for government information and services. The website was a single point for 450 federal websites, in addition to providing an email correspondence option (Fraser, 2009). In 2004, the Canadian government intended to be recognized as the government most connected to its people by enabling them to access all government information and services online at any time (Privy Council Office, 1999; Fraser,

2009). Canada's e-Government was ranked number one in 2002 and 2003 for their e-Government evolution by Accenture, which is a management consultant organisation (Accenture, 2003). The focus of the Canadian e-Government was on improved customer service delivery by using the take-up of client services to measure their accomplishments, as well as providing different delivery channels including telephone, in-person and mail options. The Canadian e-Government also promoted more integrated services that required communications across different departments. Canada continued to lead the e-Government development with sustained standards of customer service. In 2005, Service Canada was introduced as another single point for 595 services, in the form of either call centres or online access points (Government of Canada, n.d.). Although Canada fell behind in the ranking in the following years as it was noted that the government was not keeping up with the citizen's expectations for services delivery (Accenture, 2007 ; Fraser, 2009), it is still one of the leading developed countries in terms of e-Government development (Shareef et al. 2011 and Cardin et al., 2006 cited in Shareef et al, 2010).

2.8.5 E-Government in Qatar

E-government in Qatar was launched in 2003 and the planning processes began three years later. In 2008, Hukoomi (The name of Qatar's e-Government portal and which means 'governmental') was set up and then further improved by the government in 2010. According to the Hukoomi website, the objectives of Qatar's e-Government are to:

1. Increase the involvement of users in the provision of services.
2. Assist with the cooperation between different government agencies.
3. Improve the transparency of government processes.

It is reported in the last report published on Hukoomi's website that e-Government there provides over 300 information services (information only) and over 60 e-Services (Hukoomi, n.d.).

Al-Shafi & Weerakkody (2010) state that the initial period of implementation and strategy formulation process in Qatar's e-Government was very slow compared to that of other countries. However, ictQATAR (The Supreme Council of Information and Communication Technology in Qatar) became the organisation responsible for implementing e-Government, and it accelerated the progress of the initiative. Many e-Government programmes have now been introduced in many sectors such as health, education and interior affairs. As a part of the effort spent on increasing accessibility and bridging the digital divide, Qatar government provides free Internet access in many public places such as public parks.

2.8.6 E-Government in Dubai (United Arab Emirates)

E-Government in Dubai was launched in 2001 and the government started by providing a range of electronic services for citizens (Al-Zuabi & Mahmud, 2011). In 2009, the Dubai e-Government Department merged the e-Services and Government Information Resource Planning teams into one department aiming to build a knowledge community and lead the e-Transformation. Since then, the Dubai e-Government department has been updating its e-Government services, and now it provides more than 2000 government services (Dubai Government, n.d.).

Al-Zuabi & Mahmud state that Dubai's e-Government was established with both long-term and short-term objectives (2011). The short-term objectives included the provision of infrastructure and accomplishment of transactions and procedures; and the long-term objectives included services delivery, improving processes and procedures and focusing on citizens and employee awareness. In line with these objectives, many e-Services are provided by the Dubai e-Government such as e-Passport, e-Payment and e-Recruitment. The focus of the Dubai e-Government is mainly on the customer (citizen-focus); and this can be seen in the figure below (Figure 2.11) which shows the strategic dimensions of the Dubai e-Government (Humaidan, 2009).

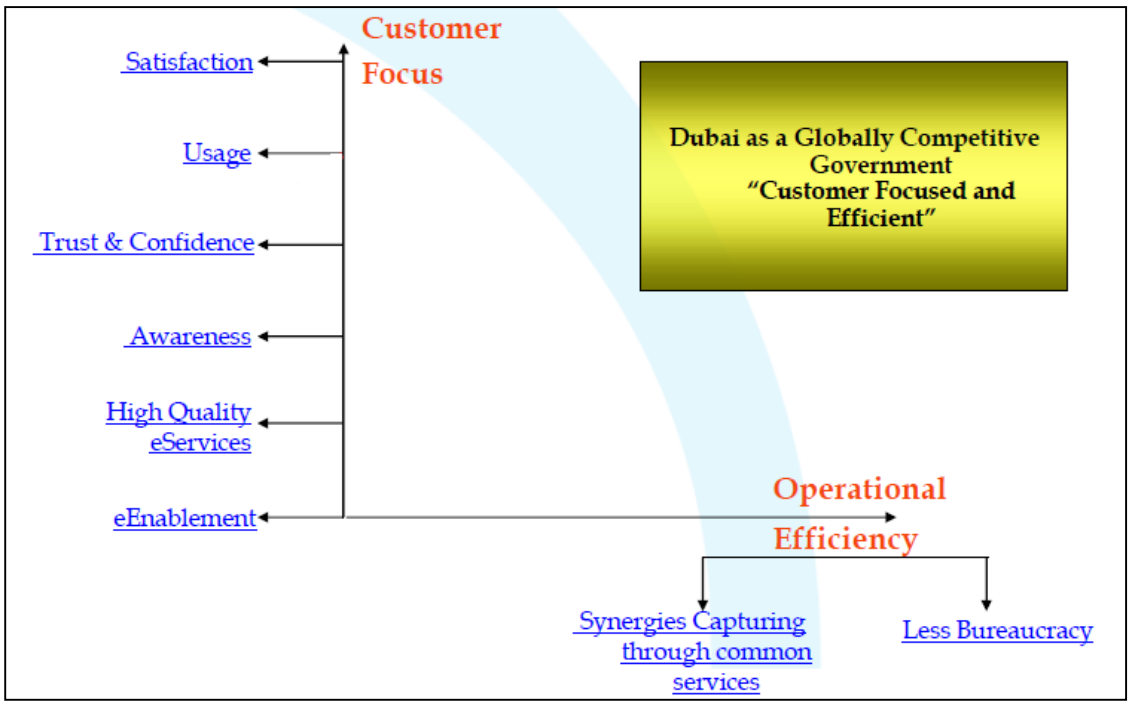


Figure 2.11: Dubai e-Government strategic dimensions (Humaidan, 2009).

There was a survey conducted in 2007 by the Dubai e-Government department in order to meet and exceed customer expectations and also to bridge the gap between what was needed and what it provided. Dr Safaraz Alam, CEO of TEXPO which is a global technology infrastructure

provider, said: “The results of the survey helped establish a baseline to action plans and targets for future years. Dubai e-Government was able to identify factors related to customer satisfaction and also usage patterns to improve future e-Services across various departments” (TEXPO, 2007).

Humaidan, who is the general director of Dubai e-Government, presented some results of this survey and reported that on average, individual e-Services users contacted government departments seven times a year, whereas businesses that used e-Services contacted government departments 34 times a year. The survey showed some reasons for using e-Government services from both stakeholders’ perspectives. Of the individual participants, 48% said it saved time, 40% cited ease of use, 7% said it saved costs, 4% mentioned it was required by the department and 1% gave other reasons. Of the business participants, 29% said it saved time, 28% cited ease of use, 16% said it saved cost, 11% mentioned it was required by the department, 11% cited company requirements and 5% gave other reasons (Humaidan, 2009). It is clear that the Dubai e-Government department and e-Government in the United Arab Emirates as a whole is investing a higher level of effort than any other country in the region in order to enhance and improve their e-Government systems. This is reflected in the ranking of UAE’s e-Government in the United Nations' 2012 e-Government Survey where it was ranked among the emerging leaders group in e-Government development (jumping from position 49 in 2010 to position 28 in 2012) (Al-Shair, 2012).

2.8.7 E-government in Jordan

The E-Government program in Jordan was launched in 2001 with the aim of improving the performance of the Jordanian government institutions in terms of providing services, efficiency, accuracy and increasing the satisfaction of citizens. The Jordanian e-Government program provides a range of e-Services for citizens, businesses and governmental agencies (Government of Jordan, n.d.). The Ministry of Information and Communications Technology (MOICT) is the ministry responsible for implementing the e-Government program; and in 2004, 13 e-Government initiatives with 30 projects were implemented, aiming to connect several ministries to a government network and provide some e-Services. However, these initiatives and projects faced several obstacles including a lack of social awareness and readiness. Thus, the government stopped the implementation process to allow for more assessment and preparation (Majdalawi et al., 2015).

A number of objectives have been set by the Jordanian e-Government, including the improvement of the quality and speed of government interaction with customers, improving responsiveness, increasing transparency, improving the efficiency of government processes and improving the ICT skills of both government employees and users. The Jordanian e-

Government was progressing well towards achieving its goals and objectives and the best improvements were achieved in 2008 and 2010. However, in 2012 these improvements slowed and the Jordanian e-Government ranking dropped down in the UN list for several reasons including the slowness of introducing e-Services and the lack of funds for e-Government services (Almarabeh & Adwan, 2013). The Jordanian e-Government then progressed better later in 2014 through providing more e-Services, activating e-Participation and improving the quality of e-Services with the cooperation of several major ministries, such as Health, Education and Finance (Majdalawi et al., 2015).

2.8.8 E-Government in Egypt

Egypt's e-Government program was launched by the Ministry of Communications and Information Technology (MoCIT) and the Ministry of State for Administrative Development (MoSAD) in 2001 (Gebba & Zakaria, 2012). The vision of the Egyptian e-Government comprised three main points, namely: public-centric service delivery, community participation and optimal utilisation of government resources. The implementation of e-Government in Egypt was divided into two stages. The first stage (2001-2007) was to set up e-Government strategies plans and implement pilot projects and the second stage (2007-2012) was to expand successful pilot projects and develop government administrative bodies. Gebba & Zakaria (2012) published research aimed at analysing the e-Government strategies and the current situation of the e-Government project in Egypt. They stated that the government launched a portal to provide some e-Services, some of which were identified for testing in the first stage. The researchers presented a summary of the Egyptian e-Government portfolio based on dividing Egypt's e-Government services into several categories. Figure (2.12) summarizes this portfolio:

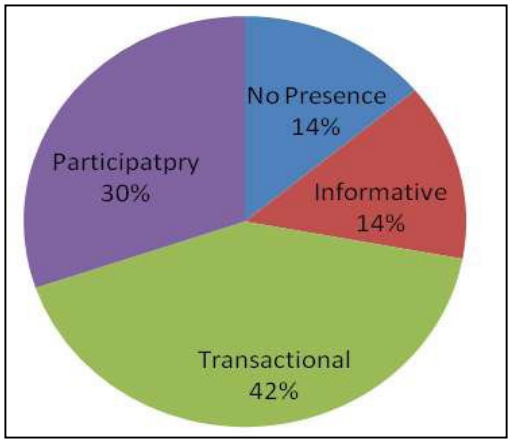


Figure 2.12: Egypt's e-Government portfolio summary (Gebba & Zakaria, 2012).

- **No-Presence category** means e-Services with either broken links or 'under construction' pages.

- **Informative category** means a uni-directional flow of information provided by the agencies and this can be either the steps required to complete a service or a form to be downloaded.

- **Transactional category** means a two-way flow of information between government and public including non-functional e-Services (file uploading and online submissions) or functional e-Services (online payments).

- **Participatory category** which is a customer-focus category concerned with customer satisfaction. It involves feedback forms, forums and blogs that help to increase the quality of e-Services provided by e-Government.

After assessing the current situation of e-Services provided by e-Government in Egypt, the researchers presented some challenges that significantly influence the success of the Egyptian e-Government systems. These challenges include legal and regulatory challenges, technical challenges and cultural challenges. Although the e-Government initiative in Egypt has made initial efforts to increase the adoption and diffusion rates; the challenges presented by the researchers have slowed the improvement and enhancement of e-Government in Egypt. Moreover, their findings indicate that Egypt is still lagging behind some Arab countries in utilizing ICTs for delivering services and information online.

2.8.9 E-Government in Bahrain

The Kingdom of Bahrain recognized the importance of e-Government and established the Information and e-Government Authority in 2007 to provide direction, guidance and decisions for developing and implementing the e-Government program (Bahrain Government, n.d.). The Information and e-Government Authority conduct many tasks including proposing suitable policies and legislations for implementing e-Government, providing services, facilitating the communications between agencies, creating electronic channels for e-Services as well as providing technical and scientific support to government agencies. Bahrain's e-Government was ranked with a very high E-Government Development Index (EGDI) in the United Nations E-Government Survey in 2014 (UN, 2014).

The first e-Government strategy was launched in 2007-2010, focusing on providing the best e-Services to stakeholders. It was ranked as 1st in the Middle East region, according to the United Nations e-Government Global Survey. Furthermore, the e-Government in Bahrain has a high satisfaction rate from its customers, as more than eight out of ten citizens/businesses have

expressed their satisfaction about the quality and level of the e-Services provided (Bahrain Government, n.d.). This is considered to be a very high indication of the success of an e-Government system.

The e-Government of Bahrain has established a one-stop-shop portal that provides informational, interactive and transactional e-Services for all customers including citizens, businesses, government and visitors. It has also facilitated the delivery of its public services through different channels including an e-Government portal, mobile portal, national contact centre that is available 24/7 and common service centres which are dedicated to customers who prefer not to use technology or have difficulty in accessing e-Government through the Internet. These centres also provide a one-stop-shop of e-Services and trained staff is available to help and train customers to access and use e-Government services (Al Bakr, 2009) .

One of the recent initiatives related to e-Government is the open data platform that provides transparency, promotes e-Participation and encourages innovation and creativity. The aim of this platform is to provide datasets from ministries and government bodies in an open format to the public. This platform is to help the public acquire a better understanding of how the government works. It also enables the public to use the data for research, provide feedback, and develop enhanced applications and solutions (UN, 2014). Moreover, the e-Government of Bahrain has promoted a Smart card that supports the e-Government program. This Smart card represents three different cards (combined into one Smart card); namely, immigration ID, Nationality and Residence and driving license. This card is also intended to provide more services such as health records, labour information, an electronic payments card and also act as a travel document. These forms of development reflect the improvements in the e-Government of Bahrain and also indicate the strong intention to implement a successful e-Government system.

2.9 E-Government in the context of Saudi Arabia

2.9.1 Overview of Saudi Arabia

The Kingdom of Saudi Arabia is the birthplace of Islam and home of the two holiest Islamic places, Mecca and Medina. Its significance as the birthplace of Islam results in around two million Muslim pilgrims visiting the country each year, as well as being significant at times of prayer for Muslims around the world who turn towards the country's location five times each day. The modern Saudi Arabia was founded in 1932 by Abdulaziz bin Abdurrahman Al Saud. The country has maintained a monarchy as its regime; and kingship has been inherited by the sons of King Abulaziz; with the current monarch being King Salman bin Abdulaziz. The King

of Saudi Arabia is officially known as the Custodian of the Two Holy Mosques (Alsaif, 2013b; The World Factbook, 2016).

Saudi Arabia is the largest country in the Arabia Peninsula, occupying 2,149,000 square kilometres. The capital of Saudi Arabia is Riyadh which is in the middle of the country. According to the last official census report published in 2010 by the General Authority for Statistics, the total population is 27 million (it is expected 31 million in 2016) divided as, around 18.7 million Saudi citizens and about 8.5 million non-Saudis (Saudi General Authority for Statistics, 2016a). The landscape of Saudi Arabia includes mountains, plateaus, plains, valleys, deserts and coasts, one lies on the Red Sea (west) and the other lies on the Arabian Gulf (east). The Kingdom of Saudi Arabia is bordered by Kuwait to the northeast, Jordan and Iraq to the north, the Arabia Gulf, Bahrain, Qatar and the United Arab Emirates to the east, the Yemen Republic and the Sultanate of Oman to the south and the Red Sea to the west (See Figure 2.13) (The Saudi Network, n.d.; The World Factbook, 2016 and Freeworldmaps, n.d.). Saudi Arabia has the second largest oil reserves in the world and they are concentrated in the Eastern province of the country. The oil represents more than 95% of the country's exports and 70% of government revenues. This facilitates the creation of a welfare state although the non-oil economy has grown considerably in recent years. The Kingdom of Saudi Arabia also has the sixth largest natural gas reserves in the world (GASME, n.d.).

Figure 2.13: Map of Saudi Arabia (Freeworldmaps, n.d.)

2.9.2 The Saudi e-Government system (Yesser):

Saudi Arabia is an example of a developing country where the majority of citizens and businesses must make use of services provided by government offices. These government services are provided at the same office hours as educational institutions, government agencies and private companies; therefore, individuals need to absent themselves from their work whenever they need to complete any transactions with government departments. Sometimes they must wait for hours in long queues or may be even need a couple of days to finish their paperwork. Furthermore, the lack of transportation options makes the situation more difficult since public transport in Saudi Arabia is often inadequate. The aim of implementing e-Government promises to reduce wasted effort, wasted time and save money. One of the main features of an e-Government system is round-the-clock availability, so citizens and users from the business sector can perform their tasks wherever and whenever they want. Given the situation created by the unique Saudi culture and lifestyle, e-Government is not just an extra luxury service, but a necessity. Furthermore, most of the Saudi population has little experience with online services, so it is very important to design customer-centred websites and e-Services that result in a high level of adoption and acceptance levels and create more positive attitudes towards e-Government (Al-Nuaim, 2011).

E-Government is a project that has been identified as one of the top Saudi government priority areas. E-Government in Saudi Arabia is still in the early stages of the implementation and adoption. The Kingdom of Saudi Arabia is in the transition process to e-Government (Alshehri et al. 2012). In 2001, the Telecommunication Commission was launched by the Saudi government and two years later, the government created the Ministry of Communication and Information Technology in 2003 (Al-Sabti, 2005). The Saudi e-Government program 'Yesser' was officially launched in 2005 (Yesser, n.d.). '*Yesser*' is an Arabic word that means 'make it easy'; consequently, Yesser program aims to provide services and information to citizens easily (Al-Nuaim, 2011). Yesser serves as an enabler and facilitator for e-Government transformation where each government organisation is responsible for implementing its own e-Services and coordinate with Yesser infrastructure projects (Al-Sabti, 2005; Yesser, 2006).

The Yesser e-Government program was launched by the Ministry of Communication and Information Technology (MCIT) in partnership with the Ministry of Finance and the Communication and Information Technology Commission (CITC). The program is controlled by a higher supervisory committee composed of the minister of finance, the minister of MCIT and the governor of the CIT commission. A steering committee has emerged from the higher committee with members representing the ministry of finance, MCIT and the CIT Commission in addition to the Program's Director General (Yesser, n.d.).

According to the e-Government first action plan document (2006 – 2010), the vision of the Saudi e-Government initiative is to provide better government services to users including citizens (G2C), businesses (G2B) and other governmental agencies (G2G) and it can be summarized by the following mission statement:

"By the end of 2010, everyone in the Kingdom will be able to enjoy from anywhere and at any time – world-class government services offered in a seamless, user-friendly and secure way by utilizing a variety of electronic means." (Yesser, 2006).

According to Al-Suwail (2007), the vision of Saudi's e-Government was that by 2010, 150 top-priority services for citizens and residents were to be provided and made available 24/7 with a 75% usage level and 80% user satisfaction rating (Al-Suwail, 2007). The first e-Government strategy and action plan was planned to be implemented between 2006 and 2010 with a total budget of SAR 3,045 million (nearly £527 million) over these first five years. Given that the annual average of the Saudi e-Government budget represents, roughly, 0.2 percent of the annual national budget; some of projects in the first e-Government action plan may be funded by means of private-public-partnership (PPP) which can decrease the budget needed (Yesser, 2006).

Although the aim of Yesser was to provide a world-class easily-accessible e-Government system by 2010, a number of evaluation reports and articles on the introduction and development of e-Government systems in Saudi Arabia indicate the actual implementation is far short from the original aims (Al Ghoson, 2010; Al Mahroqi, 2012). At the time of the fieldwork of this study, it was clear that the Saudi e-Government's vision of an easy-to-use system, comprehensiveness and high level of usage and satisfaction had not been completely met. There was an evaluation study conducted by Al-Nuaim in 2011 to evaluate the websites of Saudi ministries considered e-Government services providers. This study indicated that nine Saudi ministries, which represent 41% of the evaluated ministries, did not implement a true e-Government website. Moreover, ten ministries, which represent 45.4% of the evaluated ministries, were completely or partially at the 'web presence' stage; and only three ministries, which represent 13.6% of the evaluated ministries, were at the 'one way interaction' stage. The study also indicated that some important web elements were missing or not working efficiently on the ministries' websites, such as the search feature, sitemap, contact links, broken links, inactive links and pages under construction (Al-Nuaim, 2011). There might be some improvements that have been achieved during the period between Al-Nuaim's study time and the present, but we believe that this period is not enough to accomplish what was expected in the 2010 mission statement. Thus, there is a clear need for further research into strategies for the success of e-Government systems in Saud Arabia, as the Saudi Government has continued to

stress its commitment to developing and improving e-Government systems and services; and a second action plan covering the period 2012 – 2016 was adopted in 2012 (Yesser, n.d.).

The focus of Al-Nuaim's study was the evaluation of e-Government services providers' websites, which measured achievement of the first stage of the vision of the Saudi e-Government (providing top-priority e-Services). However, the focus of our research work will involve and address the adoption and utilisation of e-Government from different users' perspectives, which represents the second crucial part of the Saudi e-Government vision (75% usage level and 80% user satisfaction rating). From observing the Saudi e-Government portal - Saudi.gov.sa, it was found that the number of views and number of transactions that were performed for several fundamental and highly demanded services was low. For example, querying traffic fines was one of the first government services provided electronically; and this is one of the important services that individuals frequently need in Saudi Arabia. The number of views of this e-Service (in March 2014) was around 240 thousand views, whereas the number of transactions performed through the portal was 7 thousand.

Paying vehicle violation (or traffic) fines is another service that is important for many residents in Saudi Arabia; and it was also one of the first electronic services to be introduced. From observation of the service page on the Saudi e-Government portal, the number of views (in March 2014) was 39 thousand, and the number of transactions performed through the portal was 223. The same e-Services were observed one year later (in March 2015) and there was no significant increase in the number of viewings and transactions for these e-Services on the online portal. The number of viewings for traffic offence queries was 310 thousand, and there were 12 thousand transactions; whereas the number of viewings of the vehicle violation payment service was 46 thousand, and the number of transactions performed through the online portal was 432 transactions (See Figure 2.14. below) Other e-Services provided through the Saudi portal were also reviewed, and the number of viewings and transactions were also low. These are just examples that indicate low adoption and utilisation of e-Services provided online by e-Government systems and stresses the need for investigating and analysing the factors that impact the users' adoption and use.

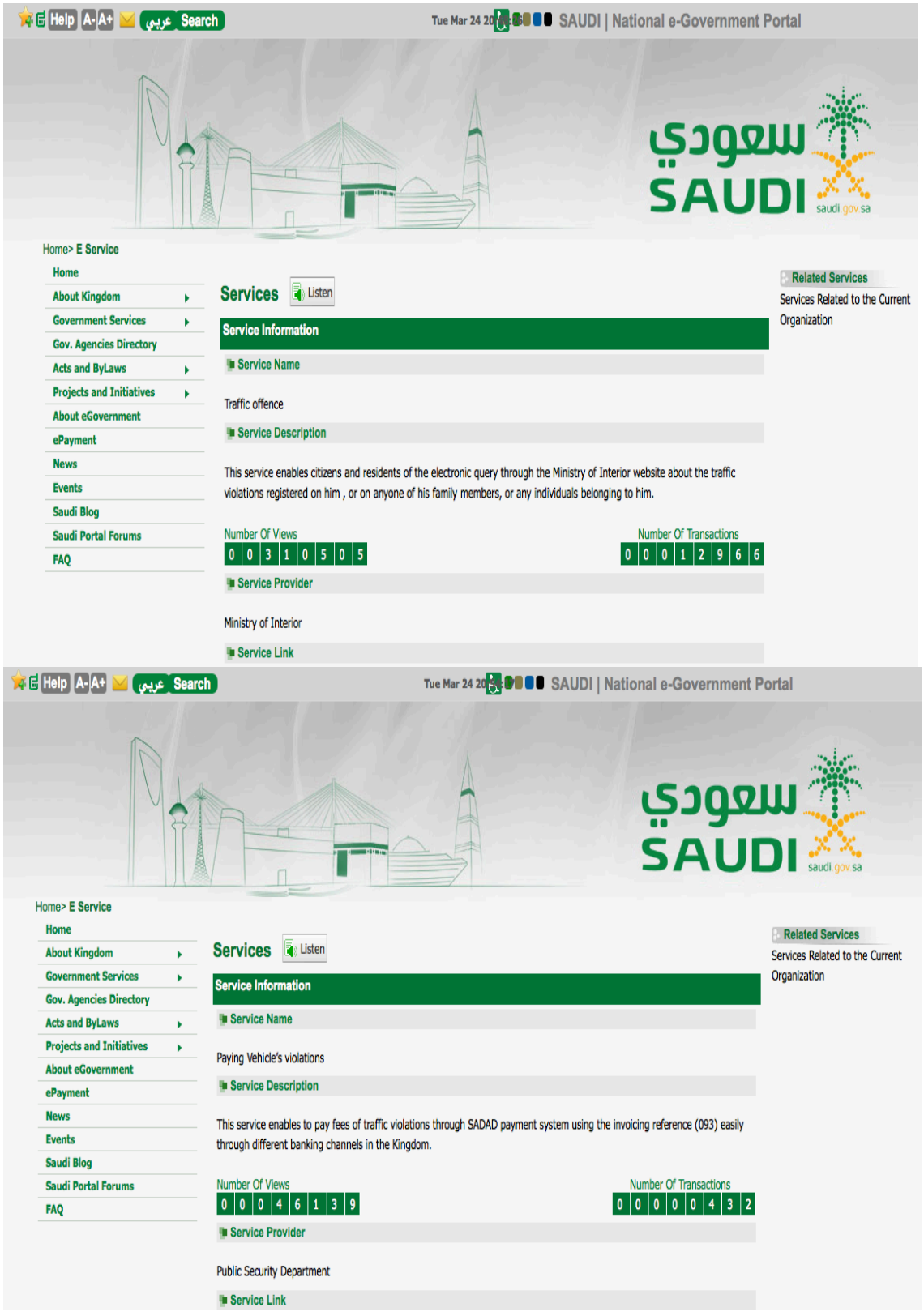


Figure 2.14: Example of low number of viewings and transactions for traffic fines queries and payment e-Services (Saudi Government, n.d.) (see appendix G for larger figure).

According to Gartner (2007), neighbouring countries such as Bahrain and The United Arab Emirates are ahead of Saudi Arabia in terms of e-Government readiness, due to the latter's late start of implementation. This notwithstanding, Saudi Arabia has since made substantial progress in its e-Government project. However, a lot of research work needs to be done in order to assess strategies for the success of e-Government implementation from different perspectives. A few studies have been conducted for such purposes. For example, Al-Nuaim (2011) conducted a study, which was discussed earlier in this section, to evaluate the Saudi ministries' websites in terms of implementing and providing e-Government services. Moreover, Al-shehry (2009) conducted a study to investigate the transition towards e-Government in Saudi Arabia from the technological and organisational perspectives; and Abanumy et al. (2005) conducted a study to assess the quality of the e-Government websites of Saudi ministries and their accessibility (Abanumy, 2006; Abanumy et al., 2005). Alfarraj et al. (2011) also conducted a study to evaluate and rate the web development progress of government websites in Saudi Arabia. A few other studies relating to the adoption and acceptance of e-Government have been conducted; but most of these studies were limited in different ways such as implementing inappropriate or limited methodologies, utilising limited frameworks, collecting data from limited samples or focusing on one specific aspect (Alzahrani & Goodwin, 2012; Alsaif, 2013b and Alshehri & Drew, 2012). Therefore, there is a lack of research and field studies that investigate and analyse comprehensively the adoption and utilisation of e-Government in Saudi Arabia; and which address country-specific factors, utilise a comprehensive framework and understand the factors that influence the adoption and use of different users. Therefore, this research attempts to fill this gap and contribute towards achieving the new Saudi e-Government vision that was updated in the second action plan *"Enabling everyone to use effective government services, in a secure, integrated and easy way, through multiple electronic channels"* (Yesser, n.d.).

2.10 E-Government Adoption and Utilisation

The adoption of electronic government systems can be described as the users' intention to interact and engage with e-Government systems (Warkentin et al., 2002). It also can be described as the users' willingness to utilise e-Government systems and services (Gilbert et al., 2004). Kumar et al. (2007), state that both descriptions, which are intention and willingness to use, represent one dimension of adoption measurement. However, e-Government adoption involves more than one dimension, which means that it is a multidimensional construct. E-Government adoption does not only entail using or not using electronic systems and services; but rather it also involves how frequently the users would intend to use them, to what extent they accept using such electronic systems, what influences their perceptions, expectations and

experiences, what factors impact their adoption, perception and intention to use, and how their adoption and willingness to use could be altered (Kumar et al., 2007). In e-Government adoption, users' needs and expectations are effectively targeted to encourage their intention to use e-Government services and systems. King & Cotterill (2007) cited a speech by the UK Prime Minister in 2005 that was related to transformational government, and which explained the importance of technology in providing a better choice in public sector services for citizens. He claimed that such services should be derived and determined by the users' needs not the providers' needs (King & Cotterill 2007).

Low adoption and utilisation could lead to e-Government system failure. Anthopoulos et al. (2016) stated that the failure of e-Government projects is still occurs and this failure can range from partial to complete failure. They claimed that not identifying real business needs, users' satisfaction, expectations and willingness to adopt and use can cause these failures. Additionally, Janssen et al. (2013) claimed that many of the large transformation projects including e-Government have not resulted in meeting the desired outcomes as stakeholders did not adopt the results of these projects. Anthopoulos et al. (2016) divided e-Government project failure into two categories, namely, pre-completion or at completion failure and post-completion failure. The first category includes either project abandonment during the implementation phase, which causes total failure, or the achievement of only some of the project objectives, which causes partial failure. The second category of e-Government failure occurs after the completion and successful implementation of the project, and includes objective failure - when the project fails to achieve a profound impact on people's lives; satisfaction failure - when its outcomes do not meet the users' needs and do not meet with their satisfaction; and adoption failure- when the project outcomes and deliverables are not adopted by the stakeholders. It is obvious that the post-completion failure, which can be caused by low adoption and usage, is the worst since it leads to a huge waste of budget, effort, trust and reputation for the e-Services providers.

E-Government adoption and usage is not a straightforward task since it involves many influential factors including human, technical and management factors. These factors contribute to other processes related to adoption, such as computer literacy and users' awareness and training (Al-Azri et al., 2010). Other factors also play a significant role in e-Government adoption, including users' trust, social and cultural influences, service quality and service reliability. For example, Teerling & Pieterson (2010) found that citizens in developing countries prefer face-to-face interaction with government more than do citizens in developed countries. They also found that this preference for traditional methods in dealing with government agencies was because the citizens' choices were influenced by their expectations, needs and the suitability of the type of service. This indicates the influence of different factors on the adoption and use of e-Government.

2.11 Technology acceptance models and theories

As stated earlier, the adoption and utilisation of e-Government systems are fundamental elements in the implementation of successful e-Government. If e-Government services are not adopted and utilised as expected, a large amount of resources, funds and effort will be wasted. Therefore, research needs to be done to investigate adoption rates and use behaviour in the context of e-Government systems (Alshafi & Weerakkody, 2010). To do so, there are several models and theories related to technology acceptance that are often used to analyse and study the adoption and use of e-Government systems from the users' perspective, including the Theory of Reasoned Action (TRA), the Technology of Acceptance Model (TAM), the Diffusion of Innovation Theory (DOI), the Perceived Characteristics Innovation (PCI) model and the Unified Theory of Acceptance and Use of Technology (UTAUT) (Ajzen and Fishbein, 1975; Davis et al, 1989; Rogers, 1995; Moore & Benbasat, 1991 and Venkatesh et al., 2003).

2.11.1 Theory of Reasoned Action (TRA):

The TRA was introduced by Ajzen & Fishbein, and the main idea behind it was that beliefs influence intentions, and intentions influence action (1975). The TRA is a well-researched model which has proven successful in explaining intentions and behaviours across several domains. It is a general model that is designed to predict and explain virtually any human behaviour (Ajzen & Fishbein, 1980). Davis stated that the TRA is appropriate to study determinants of computer usage behaviour and therefore, he introduced Technology Acceptance Model (TAM) based on it (Davis et al, 1989). According to the TRA, an individual's performance of a specific behaviour is determined by the behaviour intention (BI) to perform this behaviour, where the behaviour intention (BI) is determined by the individual's attitude (A) and subjective norm (SN). The following figure (Figure 2.15) shows the elements in the Theory of Reasoned Action:

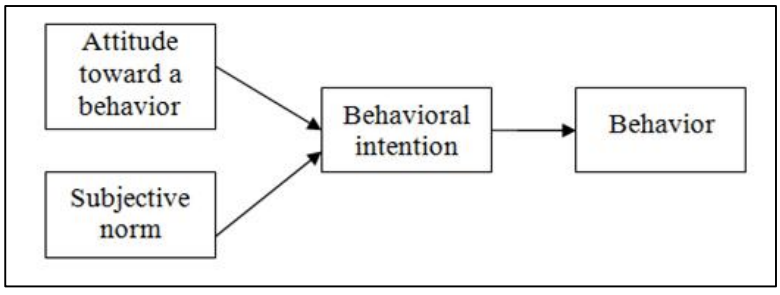


Figure 2.15: Theory of Reasoned Action (TRA) (Ajzen and Fishbein, 1980)

The factor 'attitude toward a behaviour' is defined as the positive and negative feelings about a specific behaviour, whereas 'subjective norm' refers to the individual's perception about

whether people who are important to him/her think he/she should or should not perform a specific behaviour (Ajzen & Fishbein, 1980).

2.11.2 Technology Acceptance Model (TAM):

The TAM is a model introduced by Davis; and it is a preeminent theory of technology acceptance in the field of Information Systems (1986). Numerous studies have shown that the TAM is a robust model for explaining technology acceptance behaviours in Information Technology (IT) research (Aladawi et al., 2005). The purpose of this model is to provide an explanation of the determinants of technology acceptance; and it also aims to provide a basis for tracing the impact of external factors on internal beliefs, attitudes and intentions (Davis et al, 1986). Figure (2.16) below shows the components of the Technology Acceptance Model (TAM):

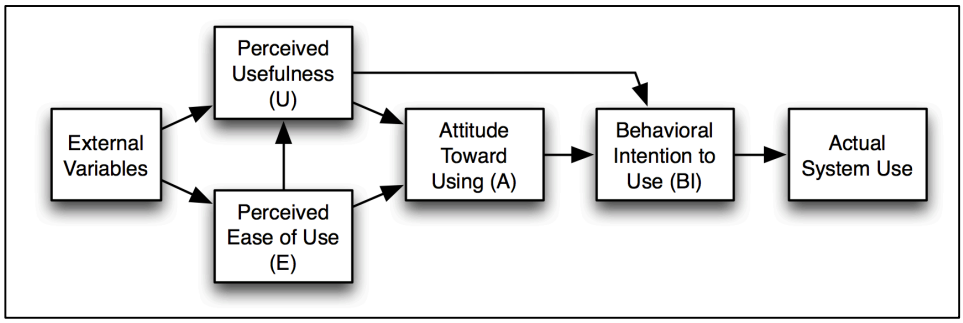


Figure 2.16: Technology Acceptance Model (TAM) (Davis et al, 1989).

In this model, it is hypothesized that a user's acceptance of an IT is determined by the voluntarily intentions to use that technology. The intention, in turn, is determined by two factors which are the perceived usefulness of using the new technology (PU) and the perceived ease of use of that technology (PEU). According to Davis, PU is defined as "the prospective user's subjective probability that using a specific application system will increase his or her job performance within an organisational context" whereas PEU is defined as "the degree to which the user expects the target system to be free of efforts" (1986).

2.11.3 Diffusion of Innovation Theory (DOI):

The DOI theory is another popular model developed by Rogers and used to analyse and investigate the user adoption of a new technology such as e-Government (1995). Rogers defined diffusion as "the process by which an innovation is communicated through certain channels over time among the members of social society" where the innovation is an idea or objects that are considered to be new (1995). The DOI suggests that the diffusion of an innovation is dependent on five factors which are:

- **Relative advantage**: This refers to the degree to which an innovation provides superior benefits to its predecessor.
- **Compatibility**: This refers to the degree to which the innovation is seen to be compatible with users' beliefs, experiences and needs.
- **Complexity**: This factor refers to the degree to which the potential users see the innovation as difficult to understand and use.
- **Trialability**: This refers to the extent to which an innovation can be experimented with on a limited basis.
- **Observability**: This factor refers to the degree to which the users can see the results of a new innovation.

We can notice that the DOI includes more factors than TAM and thus, it takes a more complex view of technology adoption than TAM. We can also notice that some factors are of similar nature to TAM elements; for example, 'complexity', in the DOI is comparable to 'ease of use' in the TAM. This gives an indication of the possibility of combining some models together as well as integrating certain constructs in order to develop a more comprehensive model.

2.11.4 Perceived Characteristics Innovation (PCI):

The PCI model was developed by Moore and Benbasat with a focus on measuring the adopters' perceptions of the information technology (1991). This model is based on the five factors that are presented in the Diffusion of Innovation (DOI) theory, but with additional factors. Two further constructs have been added in this model, which were identified as important factors in the adoption of an innovation. The first construct was 'image' which was defined by Moore and Benbasat as "the degree to which use of an innovation is perceived to enhance one's image or status in one's social system" (1991). In other words, the factor 'image' means the social approval of the adopter's use of innovation. The second construct was 'voluntariness of use' which was defined as "the degree to which use of the innovation is perceived as being voluntary or free will". In other words, the use of an innovation may be either mandated or discouraged, depending on the nature of the innovation and policy. As a result, PCI involves seven constructs which are: relative advantages, compatibility, complexity, trialability, observability, voluntariness and image.

2.11.5 Unified Theory of Acceptance and Use of Technology (UTAUT):

Due to the limitations of some theories and models that are used to understand and analyse users' adoption and acceptance of new technologies, Venkatesh developed the UTAUT model as an attempt to provide a more comprehensive model to explain technology adoption and use behaviour (Venkatesh et al., 2003). The UTAUT model was constructed from common factors

that existed in some adoption theories and acceptance models such as TAM, DOI and TRA. Therefore, it is claimed that the UTAUT model filled the gaps and compensated for the weaknesses that exist in these models (Venkatesh et al., 2003; Alzahrani & Goodwin, 2012). Moreover, the UTAUT is considered to be one of the latest developments in technology acceptance models (Alshehri et al., 2012). Numerous studies have utilised UTAUT model to understand users' adoption and acceptance of new technologies such as e-Government and e-Commerce systems.

The UTAUT model comprises four significant constructs which are performance expectancy, effort expectancy, social influence, and facilitating conditions. These core constructs are considered direct determinants of usage intention and behaviour. The UTAUT model also involves four key moderators that have an impact on the previously mentioned constructs. These moderators are gender, age, experience and voluntariness of use. The UTAUT model's constructs and moderators are presented in Figure 2.17 below:

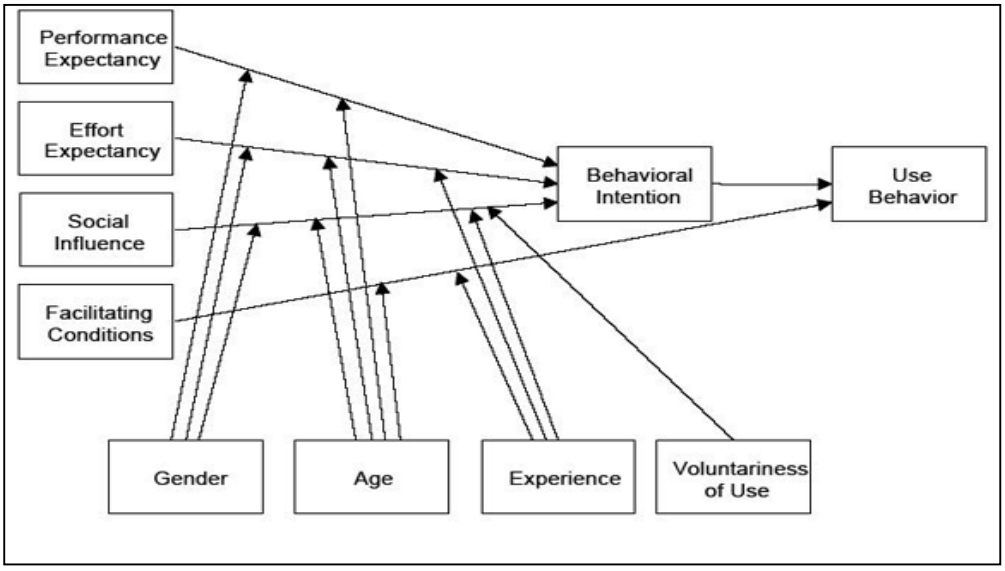


Figure 2.17: Unified Theory of Acceptance and Use of Technology (UTAUT) (Venkatesh et al., 2003).

Venkatesh et al, (2003) defined each construct as follows:

- Performance expectancy: "*is the degree to which an individual believes that using the system will help him or her to attain gains in job performance.*"
- Effort expectancy: *"is the degree of ease associated with use of the system."*
- Social influence: *"is the degree to which an individual perceives that important others believe he or she should use the new system."*
- Facilitating conditions: *"is the degree to which an individual believes that an organizational and technical infrastructure exists to support use of the system."*

As we can see from the structure of UTAUT model, it has a more comprehensive view of users' acceptance and use behaviour than the other theories and models presented earlier. Thus, some researchers have used the UTAUT model as a base to develop new and different models for their studies.

Three of the discussed models are often cited in the e-Government adoption literature; namely, the TAM, DOI and UTAUT. They have been utilised either by using them in their original forms, by adding certain constructs to them or by combining them. Thus, some of the models that have been used for analysing the adoption of e-Government in the literature have been critically reviewed in this research in order to evaluate their applicability for studying the levels of adoption and utilisation of e-Government. This will help us to fill the gaps and to overcome shortcomings which exist in the studies previously conducted, while developing this research model. The critical review of the most common models will be presented in the next chapter (Chapter 3).

2.12 E-Government adoption in different countries

In this section, studies carried out in different countries and related to e-Government adoption and utilisation, which is the focus of this research, will be reviewed and discussed. Some studies in the literature have utilised the technology acceptance models presented earlier in their original form and some others have amended them by adding and/or removing constructs. Several studies related to e-Government adoption and utilisation in different countries will be reviewed and discussed in the following section.

Carter & Belanger (2005) conducted a study to understand the factors that influence citizens' adoption of e-Government innovation. They integrated constructs of the Technology Acceptance Model (TAM), Diffusions of Innovation theory (DOI) and web trust models to form their model. Their model then involved Perceived Usefulness, Perceived Ease of Use, Image, Relative Advantage, Compatibility, Trust of Internet and Trust of Government. They suggested that all these factors would have a positive relationship to the intention to use e-Government. Their study was conducted through surveying a broad diversity of citizens at a community event (a community concert) in the USA. The items on the research instrument were adapted from prior studies; and the instrument was administered to 106 citizens and 105 were completed and analysed.

Carter & Belanger (2005) found that Perceived Ease of Use, Compatibility and Trustworthiness were significant factors that influence citizens' adoption and intention to use. Based on their findings, they suggested that e-Government services need to be provided in a way that allows

citizens to quickly and effortlessly complete the e-Services they need. They also suggested that agencies should provide services in a manner that is consistent with other ways that the citizens are familiar with. Although their study revealed significant results, their analysis did not consider other crucial factors such as social influence, cultural influence and the influence of quality of service, awareness and previous use. Moreover, the instrument items could be also problematic since they were completely adapted from prior studies which might not address and consider the research context, the situation or the environment as well as the other aspects related to the participants and the country.

Dimitrova & Chen (2006) conducted another study in the United States of America to explore the effect of non-demographic factors on e-Government adoption. They proposed a theoretical framework that was derived from two perspectives, namely, the Diffusion of Innovations (DOI) and the Technology Acceptance Model (TAM). From those models, the researchers derived the main components of their proposed framework which were Demographic Characteristics, Psychological Factors, Civic Mindedness and Information Channels. In this study, an online survey was distributed to 447 participants to collect data; and the sample was drawn from a census-balanced list provided by a market research company. The key findings of this study revealed that Perceived Usefulness, Perceived Uncertainty and a prior interest in government and services were the most significant determinants of being an active user of e-Government. Perceived Usefulness included two dimensions, which were 'perceived need' and 'perceived benefits', whereas Perceived Uncertainty included 'personal risk tolerance' and 'personal confidence' dimensions. The proposed model in this study lacks other key dimensions such as the social and cultural factors and the quality of services dimensions, all of which can play important roles in innovation adoption. Moreover, the use of an online survey method could bias the results as it included online participants only, thus, it is likely that the study's online survey might not have reached the targeted group. In other words, the mailing list of participants was obtained from a marketing research company (Survey Sampling International, Inc.), and this sampling method might not be reliable, and might include untargeted participants.

Shareef et al. (2011) conducted a study to discover the critical factors that enable citizens to adopt e-Government systems in Canada. They developed a framework grounded in a theoretical analysis of the literature including the Technology Acceptance Model (TAM), Diffusion of Innovation Theory (DOI) and Theory of Planned Behaviour (TPB). The authors claim that the models and theories, including the TAM, DOI and TPB, couldn't capture the complete essence of citizens' adoption of e-Government. Therefore, they proposed several constructs (some of them were derived from the aforementioned models) for their model, which included a number of important constructs such as Perceived Compatibility, Computer-Self Efficacy, Perceived Ability to Use, Multilingual Option, Perceived Image and Perceived Trust. The study was

conducted in four cities in the Ontario region and data was collected from 239 citizens as valid responses. The questionnaires were divided into two equal parts, the first part (50%) was distributed via postal mail, and the other half was distributed physically to houses and apartment. The addresses were taken from the telephone book for each city. The findings of this study revealed that Perceived Awareness, Perceived Ability to Use, Perceived Image, Perceived Trust and Perceived Information Quality were significant predictors for the adoption of e-Government systems at the interaction stage. The proposed model covered substantial constructs in terms of investigating the adoption of e-Government. However, some other significant factors were not involved in this study, such as the influence of the technical aspects, the influence of use regulations and the influence of previous use. Moreover, it did not explore the social and cultural impacts in a comprehensive manner as it only addressed the impact of image.

Another study was conducted by AlAwadhi & Mooris (2008) in Kuwait to explore factors that determine the adoption of e-Government services utilising an amended version of the Unified Theory of Acceptance and Use of Technology (UTAUT). The researchers collected data from 880 respondents using a quantitative approach. The study was limited to undergraduate and postgraduate students at Kuwait University and the questionnaire was administered to students taking scientific and humanities courses. This study revealed that performance expectancy, effort expectancy, peer influence and facilitating conditions were significant factors in the adoption of e-Government services in Kuwait. They further investigated the adoption determinants and conducted a series of focus groups in 2009 to qualitatively explore more factors that could affect the adoption of e-Government services in Kuwait and extend their findings (Alawadhi & Morris 2009). The participants also comprised undergraduate and postgraduate students; and potential participants were identified from the questionnaire survey that was conducted previously, where the participants were asked to provide their email addresses if they were interested in participating in the focus groups. The authors found that the likely adoption of e-Government systems is well-predicted by several factors including technical issues, trust and awareness. Based on their findings, they suggested that e-Services that are provided through e-Government systems must be useful, efficient and meet the users' needs. They further suggested more widespread and attractive awareness campaigns needed to be conducted to achieve effective adoption. This study provided valuable results about the adoption and utilisation of e-Government in Kuwait which could help the e-Services providers to implement such electronic services and systems based on the actual users' needs and expectations. However, the use of student subjects might have limited the generalisability of the findings. Thus, they recommended that further studies that included a wider diversity of

participants needed to be carried out in order to provide a better understanding and more comprehensive findings.

A study to explore barriers and factors that might obstruct the adoption and dissemination of e-Government was also carried out in Oman (Alshihi, 2006). The study also aimed to evaluate e-Government experiences in advanced nations and developed countries to extract possible solutions for the barriers identified. Alshihi's research commenced by defining theoretical concepts and aims through a general literature review, developing the research instruments based on the review to investigate such concepts and then using a qualitative approach to clarify and refine the outcomes from the quantitative approach. The survey sample size was 140 Omani citizens (including 80% students) for a face-to-face questionnaire and also semi-structured interviews were conducted with 13 government officials who made IT and strategic decisions. The study revealed a number of factors that were likely to lead to higher adoption and willingness among citizens to use e-Government services and systems in Oman. These factors included users' motivation, the convenience features of using e-Government systems, users' awareness and knowledge and previous experiences with e-Government on any other ICT projects. The study also found that the negative and positive experiences of others could have an influence through word of mouth; and this indicated a socio-cultural influence on the adoption and use of technology.

Alshihi's research also reported a number of valuable lessons that could be learned from advanced e-Government experiences from different developed countries including Australia, the United Kingdom and the United States of America. Although copying other countries' experiences might not be an effective way of implementing e-Government systems, due to differences in political, social, ICT infrastructural, procedures and managerial differences which can be illustrated as country-specific factors, in general positive experiences can be useful to consider and learn from. These lessons include that defining user profiles, needs and expectations is important so as to provide information and services accordingly. Moreover, it is crucial to involve users in the design stage of the e-Government systems to meet their needs and expectations. Increasing users' ICT awareness, skills and knowledge through marketing and education was also found to be one of the success factors for implementing e-Government. Several other important strategies included gaining users' trust through maintaining extreme security and privacy measures; ensuring a successful experience from the first time; integration and collaboration on online pubic services among different agencies and assessing e-Government projects regularly from different perspectives. The study provided fundamental lessons that were developed based on well-reviewed literature and assessing advanced and developed e-Government experiences. Thus, such lessons will be considered when conducting the current research. Moreover, the study revealed valuable findings in terms of e-Government

adoption in Oman, a neighbouring country to Saudi Arabia, which has many similarities in various aspects.

A study to explore the measurement of social factors in e-Government adoption was conducted in Jordan (Alomari et al., 2010). The authors collected data from 400 Jordanian citizens and their study explored four different factors which were; trust in terms of security and privacy and trust in government, attitudes and beliefs, internet and computer skills and website design. The results showed that trust is an identifiable concern of internet users in Jordan. Furthermore, beliefs also influence the adoption of e-Government, since some people in the Arab countries find the Internet a way to compensate for the limitations of traditional social life. The researchers also stated that website design, perceived usefulness and complexity are significant elements in the adoption of e-Government in Jordan. Another study was also conducted in Jordan to assess factors that influence the awareness and use of e-Government in Jordan (Al-Jaghoub et al., 2010). The authors collected data from 1200 participants (university students) and one significant finding was the low level of e-Government awareness, since 75% of the participants did not know much about e-Government. The surveyed participants were students who should have known more about e-Government since they usually use the Internet. The study also involved group discussion, which revealed that concern about security was a very important issue. The researchers stated that there was a lack of trust when using online transactions, especially when users are required to provide important document and payments. This may be related to cultural issues, since the Internet there still seems to be largely used for entertainment. It is clear that awareness and trust of e-Government systems in Jordan are crucial factors that can influence the adoption and use of such systems.

Rehman et al. (2012) also conducted a study to identify critical factors that influence the citizens' adoption of e-Government systems in Pakistan. An integrated conceptual model was proposed based on a related literature review and included combining constructs from the Technology Acceptance Model (TAM), the DeLone and McLean model (D&M), the Diffusion of Innovation (DOI) model and the SERVQUAL model which is a services quality framework (Davis et al., 1986; William et al, 2003; Rogers, 1995 and Parasuraman, 1988). Their model involved several constructs such as website design, e-Readiness, security, trust and quality of service. The study used a quantitative approach, utilising an online survey and data was collected from 138 citizens including governmental officials, academic researchers, software engineers, business personnel and also students. The findings from this study can be divided into two parts, namely, factors influencing the citizens' intention to adopt e-Government systems to get information and factors influencing their intention to conduct e-Transactions.

Rehman's study revealed that awareness and information quality were found to be significant factors in terms of gaining information from government websites. Furthermore, perceived ease of use, awareness, service quality and transaction security were all found to be significant in terms of performing e-Transactions through e-Government systems. Although the model involved key constructs that have high importance in the adoption of e-Government, it lacked some other important constructs such as the influence of social aspects, the influence of cultural aspects and the impact of prior use. Additionally, the survey was conducted online by sending emails with the survey link to the targeted respondents and this method could omit other important participants who are offline citizens. Generally, the study utilised a well-developed model that captured the influence of many factors. It also resulted in clear and valuable results that could be used to promote e-Government success in Pakistan.

Weerakkody et al. (2013) claimed that e-Government adoption and diffusion is often impeded by number of factors that are related to citizenry who are one of its stakeholders. Therefore, they conducted a study in Saudi Arabia to examine the role of intermediaries, who are used for delivering government services and facilitating e-Government adoption and diffusion. The intermediaries are organisations that are operated by the private sector, authorized and regulated by the Saudi government to help citizens who are not computer savvy or could not access e-Government services. Madinah, which is a large city in Saudi Arabia, is the only city that introduced the e-Government intermediary (e-office). Thus, the study aimed to examine the role of these intermediaries in e-Government adoption particularly with e-Services provided by the traffic department.

Weerakkody's study utilised an amended version of the Unified Theory of Acceptance and Use of Technology (UTAUT) which included two more constructs, namely, trust in the Internet and trust in the intermediaries. The study used the quantitative approach and the questionnaires were distributed personally with the help of 10 volunteers to different addresses. The data was collected from 502 respondents from Madinah. The study's results suggested that intermediaries are a very useful channel to facilitate e-Government adoption and diffusion. It was claimed that the adoption and use could increase with the use of intermediaries due to the positive attitude of citizens to communicating with the government online through an intermediary. The study also revealed that factors such as performance expectancy, effort expectancy, trust of the Internet and facilitating conditions had an important role in explaining the adoption of e-Government services offered via intermediaries. The utilised framework lacked several key constructs, similar to many other studies in the e-Government adoption literature, such as the influence of previous use, the influence of quality of service and the influence of the awareness. Moreover, the study only involved one city in Saudi Arabia and this would limit the generalization of the

results to other contexts. More investigation of different cities would provide a better understanding of the role of intermediaries in facilitating e-Government adoption.

Another study was conducted in Saudi Arabia to identify challenges and barriers that face e-Government adoption and diffusion from the citizen's perspectives (Alshehri et al. 2012). The study quantitatively surveyed 460 participants including 400 citizens and 60 IT employees from the government public sector. The aim of this study was to determine the degree of importance of eleven previously determined barriers and obstacles (Alshehri & Drew 2010). Thus, the respondents were asked to evaluate whether they considered these barriers important, very important or not a barrier from their point of view. The same barriers and obstacles were introduced to all the respondents both citizens and IT employees. The results of this study are summarized in Table 2.4 below which presents the identified barriers and challenges along with the percentages of responses from the two groups of participants:

Table 2.4: Barriers and challenges facing e-Government adoption in KSA (Alshehri et al., 2012)

Barriers and challenges	**Percentages of the citizen's responses**		**Percentages of IT employees' responses**	
	Important barrier	Very important barrier	Important barrier	Very important barrier
IT Infrastructure weakness of government public sectors	53.5%	46.5%	20%	80%
Lack of knowledge and ability to use computers and technology efficiency	51.2%	48.8%	68.3%	31.7%
Lack of knowledge about the e-Government services	33.5%	66.5%	18.3%	81.7%
Lack of security and privacy of information in government's websites	53.5%	46.5%	65%	35%
Lack of users' trust and confidence to use e-government services	49.3%	50.7%	43.3%	56.7%
Lack of policy and regulation for e-usage in KSA	49.5%	50.5%	63.3%	36.7%
Lack of partnership and collaboration between the governmental sectors	41.5%	58.5%	60%	40%
Lack of technical support from government's websites support team	32.5%	67.5%	6.7%	93.3%
Governmental employees resistance to change to e-ways	42.5%	57.5%	55%	45%
The shortage of financial resources of government sectors	49.5%	50.5%	30%	70%
The availability and reliability of internet connection	33%	67%	25%	75%

Alshehri's study provided useful results that could benefit researchers and practitioners in the e-Government field, particularly in Saudi Arabia as key challenges and obstacles were determined from the users' perspectives. The evaluation of the already determined barriers provided a good insight about their importance from a wider perspective that included citizens and IT employees. Thus, the findings will provide the current research with useful information about the barriers and challenges that face e-Government adoption in Saudi Arabia, which benefits the development of the research model and the instruments' items.

Additionally, Al-shafi & Weerakkody (2010) have utilised the UTAUT in its original form to explore the adoption of e-Government services in the state of Qatar from the citizens' perspective. They tested some influential factors affecting e-Government acceptance and collected data from 1179 citizens. The results of their study revealed that three constructs, namely, Performance Expectancy, Social Influence and Facilitating Conditions, significantly influenced the adoption and intention to use e-Government in Qatar. The results of their study were expected and convincing for this particular region (Gulf countries). Moreover, Alshehri et al. (2012) also utilized the same model (UTAUT) to analyse the adoption of e-Government in the Kingdom of Saudi Arabia from the citizens' perspective. The study revealed that Performance Expectancy, Effort Expectancy and Facilitating Conditions were significant in terms of positive effect on behavioural intention to use e-Government. Both studies showed some similarities between the two countries with regard to the influential factors on citizens' technology adoption, since Performance Expectancy and Facilitating Conditions were significant in both contexts.

Taiwo et al. (2012) also conducted a study using the UTAUT to investigate adoption behaviour and the use of e-Government services in Malaysia. They amended the UTAUT model for their study by integrating risk and trust dimensions. Their study surveyed 101 university students and their findings revealed that Performance Expectancy, Peer Influence, Trust belief and risk taking propensity were significant in predicting the intention to adopt e-Government.

We can see from the review and discussion of the related literature that several studies have revealed fundamental results and achieved significant findings that lead to a better understanding of e-Government adoption and utilisation as well as contributing to the success of e-Government systems and services. A number of studies and research conducted in different countries were involved in the literature review to have clear vision and better understanding of the research context. Some of these studies have utilised common technology acceptance models that were presented earlier and these models have several limitations that could limit capturing and specifying the complete essence of e-Government adoption and utilisation. Such limitations will be discussed in the next chapter (Chapter 3). Moreover, some of the studies

have several other limitations in their methodologies such as collecting data from specific sample such as students or online users as well as utilising items in their instruments that were developed in previous studies which may not be applicable to the study context. Therefore, this research reviewed the literature to benefit from the positive aspects and overcome the shortcomings and gaps.

2.14 Conclusion

E-Government systems are gateways for the public to access information and conduct services online through electronic and online means. They have tremendous potential to provide solutions and solve a variety of problems, which then can lead to an improvement in the relationship between citizens and governments and also enhance the quality of individuals' lives. E-Government is one of the trends that have become very important in recent years and it is the backbone of modern governance. It creates a structured network for service delivery, makes governance processes more effective and more efficient and also increases interactivity, engagement, accountability and transparency between a government and its citizens.

This chapter has provided an overview of e-Government as well as different definitions of e-Government from different authors. E-Government domains and maturity levels were reviewed and discussed, and a comprehensive review of the objectives, advantages, barriers and challenges of e-Government has also been provided. In order to understand e-Government implementation levels, a number of e-Government phase models that explained the stages of implementing such systems have also been reviewed and investigated. Furthermore, this chapter has briefly explored e-Government implementation in several developed and developing countries to give a wider and better view of the implementation of such systems globally. Finally the Saudi e-Government program Yesser was also reviewed in more detail.

Additionally, this chapter has addressed the adoption and utilisation of e-Government, which is the focus of this research. It also reviewed a number of common technology acceptance models including TAM, DOI and UTAUT that have been utilised by many studies in e-Government adoption literature. Relevant studies and research from different countries were also investigated and discussed. The next chapter (Chapter 3) will develop and discuss the conceptual model which will be utilised in this research to explore and analyse the key factors that influence e-Government adoption and use.

Chapter Three: The Research Framework

3.1 Introduction

The theoretical framework related to users' adoption and utilisation of e-Government systems and services is discussed in this chapter. This chapter will include a critical review and investigation of models and theories related to technology acceptance that are commonly used in e-Government adoption and use literature. The chapter also highlights the key constructs of the proposed conceptual model which represent the salient factors that influence the adoption and use of e-Government systems and services in Saudi Arabia including personal factors, motivational factors, technical factors and reliability factors. Moreover, it will present the research hypotheses that were developed in accordance with the model's constructs. The conceptual research model that is proposed in this research will thus be presented and discussed along with an explanation of all possible relationships between its constructs.

3.2 Critical Review of Technology Acceptance Theories and Models

In order to analyse e-Government adoption and utilisation, the research developed a model called e-Government Adoption and Utilisation Model (EGAUM). This model is one of the main contributions of this research and it will be used to investigate and analyse the factors that have a crucial influence on different users' adoption and use level of e-Government. The EGAUM's development is based on an extended analysis of the literature of technology acceptance in conjunction with insights gained from investigating several models and theories that are commonly used in analysing the acceptance usage of technologies including: the Theory of Reasoned Action (TRA), the Technology Acceptance Model (TAM), the Diffusion of Innovation (DOI) and the Unified Theory of Acceptance and Use of Technology (UTAUT) (Ajzen & Fishbein, 1975; Davis, 1986; Davis et al., 1986; Rogers, 1995 and Venkatesh et al., 2003). In the EGAUM, the research is attempting to identify, investigate and analyse the impact of fundamental factors that influence the adoption and usage level of e-Government systems from different perspectives which will lead to better understanding of different aspects that will bring such systems to a high level of success.

This section will discuss and critically review the technology acceptance models and evaluate their applicability to the e-Government context. As discussed in Chapter 2, several models and theories in the literature have been developed to study the acceptance and the diffusion of technologies and the aforementioned are those dominant in technology acceptance literature. Most of the research in e-Government literature has utilised some of these common models and theories to analyse the adoption of e-Government, either by using their original forms, by

adding certain constructs to them or by combining them. However, some of the models that have been used for analysing the adoption of e-Government in the literature were critically analysed in this research in order to evaluate their applicability for studying the e-Government's adoption and utilisation. This helped to fill the gaps and to overcome shortcomings, which exist in the conducted studies, while developing this research model.

The Theory of Reasoned Action (TRA) is a well-researched model that has proven successful in explaining intentions and behaviours in different domains. According to Lean et al. (2009), TRA is one of the first theories to study individuals' behaviour towards the acceptance and utilisation of computers. Furthermore, Davis stated that the TRA is appropriate for studying determinants of computer usage behaviour; and it was used as a base for developing the TAM model which is also widely used in understanding the users' acceptance of technology (Davis et al., 1986). The TRA has been utilised in several studies that aim to understand the acceptance and adoption of systems driven by the information and communication technologies (ICT) such as the acceptance of online systems (Shareef et al., 2009). However, the TRA lacks significant constructs that need to be addressed in investigating and analysing the adoption and utilisation of large and complex systems such as e-Government. The unaddressed constructs are the simplicity of the information system, the quality of the system, the influence of awareness and the influence of trust. Although the two constructs involved in TRA i.e. the attitude toward behaviour and the subjective norm are important, they are not sufficient to understand comprehensively the adoption and use of e-Government systems. Moreover, Davis et al. (1989) stated that the *Subjective Norm* construct is one of the least understood aspects of TRA. The *Subjective Norm (SN)* construct is likely to have an indirect impact on *Behavioural Intention (BI)* via the *Attitude towards a behaviour (A)* construct. This will make differentiating between the direct effect of *SN* on *BI* and the indirect effect of *SN* on *BI* via *A* more difficult. Therefore, a more comprehensive model is needed for the e-Government adoption and use analysis.

The Technology Acceptance Model (TAM) is another model that has been used in several studies in the technology acceptance and adoption literature. A number of researchers have also utilised the TAM to investigate the adoption and use of e-Government systems (Warkentin et al., 2002; Dimitrova & Chen, 2006; Al-hujran et al., 2011). Benbasat & Barki (2007) stated that the TAM is one of the most accepted and used model in the literature within various fields including management, business and information systems; however, it ignores a number of factors that have a strong relationship with technology acceptance and adoption. For example, it does not address the influence of social norms which was validated in the Theory of Reasoned Action (TRA). Moreover, it does not address other factors such as the influence of the technology's quality, previous use of technology and awareness on the adoption and intention to use. Moreover, attitude towards using does not fully mediate the relationship between both

Perceived Ease of Use (PEU) and Perceived Usefulness (PU) and intention to use (Ramayah & Ignatius, 2005). Furthermore, external variables that have been proposed as influential factors that affect the Perceived Ease of Use (PEU) and Perceived Usefulness (PU) are not fully explored in the TAM (Sang & Lee, 2009). Alshafi & Weerakkody (2010) also state that the TAM excludes some important resources of variance, and does not consider other important factors that could prevent users from using information systems, such as time and money constraints. Though, Davis & Venkatesh (2000) have updated the TAM into the TAM2, which includes more constructs such as Subjective Norms, Image, Output Quality and omits others such as Attitude Toward Using (Venkatesh & Davis, 2000); the TAM2 also lacks fundamental constructs and factors such as the influence of trust, awareness and regulatory aspects; all of which are important in the e-Government adoption and use analysis. Shareef et al. (2011) claims that the TAM cannot capture and specify the complete essence of e-Government adoption and usage due to its lack of many important factors and constructs that have direct impact on users' adoption and intention to use.

The Diffusion of Innovation Theory (DOI) is another popular model that is used in number of studies to evaluate the adoption and dissemination on innovations. It is concerned with the explanation of factors determining the rate of adoption of an innovation. A number of studies in the information technology adoption literature, including the adoption and use of e-Government systems, have applied DOI theory to understand the acceptance, intention to use and diffusion of such systems. For example, Lee et al. (2011) combined DOI theory with the TAM model to investigate factors affecting business employees' intention to use e-learning systems. Furthermore, Carter & Belanger (2005) have integrated constructs from DOI theory into their proposed model to understand the factors that influence citizens' adoption of e-Government innovation. Sang & Lee (2009) also integrated certain constructs from the DOI theory to form a conceptual model for analysing e-Government acceptance in the public sector. DOI theory was part of many other studies' frameworks which significantly contributed to the field of ICT adoption. However, DOI also lacks certain factors and constructs that are crucial when analysing the diffusion and adoption of new technology, particularly e-Government services and systems such as the trust factor, social and cultural factors in addition to awareness and knowledge factors. Several studies in the literature affirmed that some of the DOI constructs, namely, relative advantage, compatibility and complexity are the most significant constructs in the adoption and diffusion of technology (Carter & Belanger, 2005; Sang & Lee, 2009). On the other hand, the other constructs in the DOI, namely, trialability and observability were not appropriate for investigating the adoption of certain new technologies, including e-Government systems (Carter & Belanger, 2005; Bradford & Florin, 2003 and Agarwal & Prasad, 1998). Furthermore, the observability construct, which refers to the extent to which the innovation

provides visible and tangible results, can be implicitly integrated into the relative advantage construct. Thus, only a limited number of constructs in the DOI are found to be important for analysing the adoption and diffusion of ICTs, including e-Government systems, and this emphasises the need for more a comprehensive framework for such a context.

The Unified Theory of Acceptance and Use of Technology (UTAUT) is one the most recent frameworks used in the technology adoption and utilisation literature; also it is used more widely in this field than the other models and theories. For example, it has been utilised in analysing the adoption and use of social media in the interaction between public relations practitioners and the public (Curtis et al., 2010); to examine the factors that affect the intention to use mobile services and its advanced services (Carlsson et al., 2006); and to analyse and understand the adoption and use of online banking (Raffai et al., 2012; Martins et al., 2014). Many researchers also utilised the UTAUT in analysing the adoption and use of e-Government services and systems (Alshehri et al., 2012; Alzahrani & Goodwin, 2012; Weerakkody et al., 2013; Al-Shafi & Weerakkody, 2010 and AlAwadi & Morris, 2008). Despite the frequent use of the UTAUT in various studies from different disciplines; it also has limitations for analysing technology adoption and use, particularly in the field of e-Government. The UTAUT does not address some very important constructs and factors, such as perceived awareness and quality of service, although these factors are very likely to have a strong impact on adoption and intention to use technologies. It also does not address constructs related to reliability aspects such as security, privacy, trust and regulations. Moreover, the UTAUT does not address the influence of culture on the adoption and utilisation of technologies. Although the UTAUT considers the influence of certain personal demographic factors, including age and gender, it does not address other important demographic factors, such as the user's education level and the user's income, which are likely to influence the utilisation and adoption level. Van Raaji & Schepers (2008) state that the grouping and labelling of items in the UTAUT is problematic since a variety of disparate items are combined to represent a single construct.

As discussed previously, most of the studies and research in the technology adoption and utilisation literature, particularly in the context of e-Government, have utilised the popular models presented earlier- including the TAM, DOI and UTAUT. Therefore, the outcomes were limited due to the limitations that exist in the frameworks utilised. These limitations indicate that there is a need for a more comprehensive framework that is appropriate for investigating the adoption and utilisation of e-Government services and systems. A number of constructs that are involved in several technology acceptance models are important and they have been supported in the literature; thus, they are integrated into the current research model but within a wider point of view. However, other important constructs that are crucial for e-Government adoption and use were not addressed in the technology acceptance literature; thus, they were proposed in

the EGAUM. The model developed in this research attempts to address salient factors that are related to the e-Government context and measure such factors from various real users' perspectives by considering their intentions, perceptions and beliefs as well as the country-specific aspects of Saudi Arabia.

3.3 E-Government Adoption and Utilisation Model (EGAUM)

The EGAUM model comprises two dependant variables, namely, *Perceived E-Readiness* of e-Government (*PER*) and *Intention to Use* E-Government (*ITU*) which lead to the Actual Adoption and Utilisation of e-Government. The EGAUM also contains four main independent constructs which are Personal Factors (PF), Motivational Factors (MF), Technical Factors (TF) and Reliability Factors (RF). These independent constructs represent the fundamental groups of factors that have a crucial influence on the level of e-Government utilisation and adoption. Each independent construct has sub-variables (group of factors) which in turn have different levels of impact on the adoption and utilisation of e-Government. Table 3.1 below shows the factors involved in the EGAUM.

Table 3.1: Categories of the EGAUM's factors

The construct	**The factors**
Personal Factors (PF): This construct comprises a group of factors that effectively describe the e-Government users and the relationships between such factors and their intention to use.	• Age • Gender • Education • Location • Income
Motivational Factors (MF): This construct represents the factors that motivate the users to adopt and use e-Government systems.	• Perceived Benefits (PB) • Socio-Cultural (SC) • Awareness (AW) • Functional Quality of Services/System (FQS) • Previous Experience (PE)
Technical Factors (TF): This construct contains factors that are related to the technical aspects which have an influence on the users' adoption and utilisation of e-Government.	• Perceived Simplicity (PS) • Technical Quality of Service/System (TQS) • Accessibility (ACC)
Reliability Factors (RF): This construct comprises factors that are related to the reliability aspects which have an impact on the users' adoption and use of e-Government.	• Perceived Trust (PT) • Regulations and Policies (RP)

Figure 3.1 below presents the E-Government Adoption and Utilisation Model (EGAUM). It shows the main constructs and the groups of factors that are proposed for each main construct. It also presents the hypothesized relationships between the model's constructs.

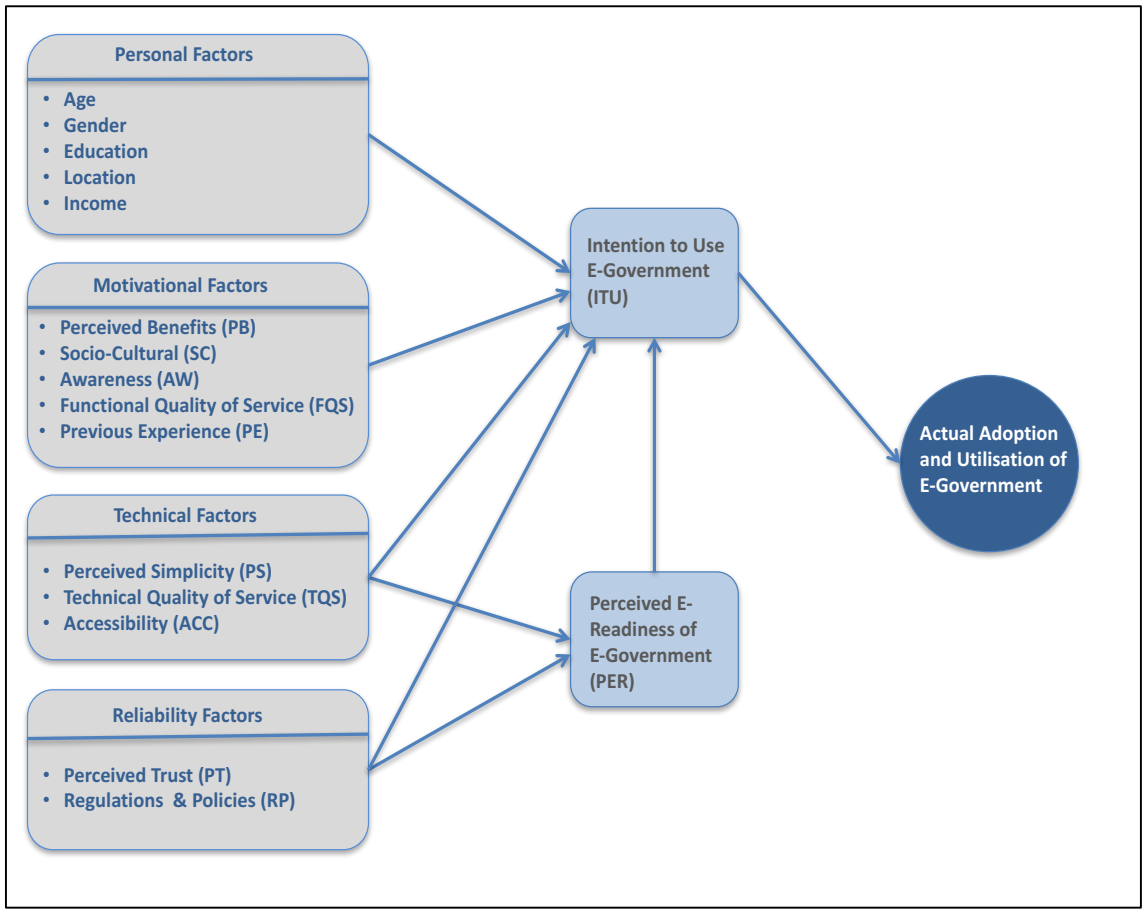


Figure 3.1: E-Government Adoption and Utilisation Model (EGAUM) (see appendix G for larger figure).

The independent constructs, which represent the factor groupings, are represented in the four rectangles on the left side of the model and they are Personal Factors (PF), Motivational Factors (MF), Technical Factors (TF) and Reliability Factors (RF). The proposed factors were grouped into the relevant constructs. For example, the Personal Factors (PF) construct comprises all the personal factors which are: *Age*, *Gender*, *Education*, *Location* and *Income*. The Motivational Factors (MF) construct comprises *Perceived Benefits* (*PB*), *Socio-Cultural* (*SC*), *Awareness* (*AW*), *Functional Quality of Service/System* (*FQS*) and *Previous Experience* (*PE*). The Technical Factors (TF) construct comprises *Perceived Simplicity* (*PS*), *Technical Quality of Service/System* (*TQS*) and *Accessibility* (*ACC*). Finally, the Reliability Factors (RF) construct comprises *Perceived Trust* (*PT*) and *Regulations and Policies* (*RP*). Moreover, the dependent variables are represented in the two rectangles on the middle of the model and they are *Intention to Use* E-Government (*ITU*) and *Perceived E-Readiness* of e-Government (*PER*). The proposed relationships between the model's constructs are represented by the arrows. Table (3.2) presents

the proposed relationships between the model's constructs. All the proposed factors will be explained and discussed in the following sections alongside the hypothesis developed for each factor.

Table 3.2: The Relationships in the EGAUM

The relationship	**Type of relationship**	**Direction of relationship**
The Personal Factors (PF) have a relationship with the Intention to Use e-Government (ITU)	Direct relationship	PF → ITU
The Motivational Factors (MF) have a relationship with the Intention to Use e-Government (ITU)	Direct relationship	MF → ITU
The Technical Factors (TF) have a relationship with the Intention to Use e-Government (ITU)	Direct relationship	TF → ITU
The Reliability Factors (RF) have a relationship with the Intention to Use e-Government (ITU)	Direct relationship	RF → ITU
The Technical Factors (TF) have a relationship with the Perceived E-Readiness of e-Government.	Direct relationship	TF → PER
The Reliability Factors (RF) have a relationship with the Perceived E-Readiness of e-Government.	Direct relationship	RF → PER
The Perceived E-Readiness of e-government has a relationship with the Intention to Use e-Government (ITU)	Direct relationship	PER → ITU

3.3.1 Personal Factors (PF)

The research suggests that factors such as the users' age, gender, education and computer literacy level, location and income need to be investigated and explored when it comes to analysing e-Government adoption and utilisation. Most of the previous adoption models, such as the TAM and DOI models, did not take these factors into account at all; whereas some other models, such as the UTAUT model, considered them as moderators but not main factors. However, some studies in the e-Government adoption and usage literature added the idea that user characteristics are potentially influential factors on the adoption and usage of e-Government. For example, a study conducted by Sciadas suggested that older users tend to correlate positively with the use of e-Government, due to the relative increase in the access to the required technologies (2002). This might not continue to be the case in recent years and also might not reflect the situation in Saudi Arabia, which is the context of this research. This

emphasises the need to include the personal factors when analysing technology adoption and usage particularly in e-Government.

The Personal Factors (PF) in the model used in this research (EGAUM) involve five main factors; all of which have a direct influence on Intention to Use e-Government (ITU). These factors are:

3.3.1.1. Age

One of the important factors that influence the e-Government usage level is the user's age. Not many adoption models considered this as independent factor, but rather, most of them treat it as a moderator variable on other factors. Exploring the impact of the user's age on e-Government adoption will lead to better understanding of age-based aspects that need to be improved in order to increase the acceptance and use of e-Government. The importance of investigating this factor can be justified by looking at the results of some studies that involved users' age in their technology adoption analysis. They revealed different levels of e-Services usage by different age groups. For example, Sciadas's study, which is mentioned earlier, notes that older users tend to correlate positively with the use of e-Government (2002). On the other hand, some recent studies found that older users are less likely to use e-Services and users under 25 years old are more likely to adopt and use e-Services (Al-Otaibi and Al-Zahrani, 2009; Alrawi and Sabry, 2009 and Baker et al., 2007).

An early study conducted by Hill et al. (1998) found that age is one of the important factors that influence IT adoption in Arab countries. Another study conducted by Baker et al. also supported the importance of the age factor in technology adoption (2007). These findings emphasise the need to consider age when analysing technology adoption such as e-Government adoption in all countries, but Saudi Arabia in particular. All the previous discussions and findings emphasise the need to investigate and analyse the influence of the users' age on the adoption and utilisation of e-Government and therefore, the age factor is included in the EGAUM, under Personal Factors (PF) and predicted to have a direct influence on *Intention to Use* e-Government (*ITU*). A hypothesis (H1) was thus developed as:

H1: Different age groups will have different levels of intention to use e-Government systems/services.

3.3.1.2. Gender

Gender is another crucial factor that needs to be addressed when analysing the adoption of e-Government systems especially in Saudi Arabia. This focus and emphasis on investigating the gender factor in the Saudi e-Government context is because certain gender issues affect the adoption and usage level of e-Government. To be more precise, most government services are

conducted by men in Saudi Arabia due to limitations that can prevent women from conducting such services. Some of these limitations can be explained as follows:

- *Lack of transportation options*

In Saudi Arabia, women are still not allowed to drive cars, and driving is generally only allowed for men. Furthermore, there is a significant lack of public transportation such as trains and buses in Saudi Arabia. Women mainly rely on private drivers, taxis or their relatives for their transport. Although these options are usually available for them most of the time, it is still considered as a lack of transportation options that can prevent women from accessing government services in person. Therefore, implementing successful e-Government is significant, and indeed crucial, for women in Saudi Arabia. This is the reason for why the gender factor is included in the EGAUM as a direct influence on e-Government acceptance and utilisation; and which was not addressed in any previous model found in the literature.

- *Gender division in the offices of some government agencies and organisations*

Due to cultural and religious reasons, the Saudi government allocates separate offices in some government organisations and agencies to deal with women when they need to conduct government services in person. The employees in these government offices are women and usually these women's offices are not crowded as are the offices in the men's sections. Although this division provides more privacy and comfort for women and avoids them having to confront the crowding that usually occurs in the men's section offices, these separate offices are neither available in all cities nor available in all government organisations. Therefore, successful e-Government will not only provide the same environment as separate government offices for women, but also will provide this privacy and comfort to all users including men. This is another reason for integrating the gender factor into the EGAUM to be investigated and analysed.

Women in the Saudi Arabian population number approximately 11.7 million (the population in Saudi is approximately 27.1 million in total) which represents 43% of the total population (Saudi General Authority for Statistics, 2016a). In view of the previous discussion, women in Saudi Arabia might find limited options to access government services in person and thus, successful e-Government services are fundamental and there is a significant need. This indicates the importance of integrating gender as one of the Personal Factors (PF) that have a direct impact on *Intention to Use* e-Government (*ITU*) which needs to be explored and analysed alongside the other personal factors involved in the EGAUM. Thus, hypothesis H2 was developed for this factor as follows:

H2: Different genders will have different levels of intention to use e-Government systems/services.

3.3.1.3. Education

Education is another important factor that needs to be investigated when analysing e-Government adoption and usage. This is because of the strong correlation between computer and information literacy and the education level of a user (Al-Sobhi et al., 2010). Computer and information literacy is defined as whatever a person needs to know to be able to use computers (Alomari et al., 2012). It is suggested in this research that users with a higher level of education are more likely to adopt and use e-Government systems, due to their knowledge of how to use the Internet and computers, even if they are not Information Technology specialists. In case that they do not have much knowledge of dealing with computers, they have the ability and proficiency to find out how to use technologies and to acquire new knowledge. Thus, it is important to analyse the impact of education level on the adoption and usage level of e-Government.

Similar to the previous two personal factors, education is not involved in any of the technology adoption models in the literature as a main factor but rather, it is considered as moderating variable. Computer and information literacy, which is affected by the education level, is also not considered in many adoption models in the literature. Therefore, the EGAUM includes education level as an important factor that has a direct influence on *Intention to Use* e-Government systems; and hypothesis H3 was therefore proposed as follows:

H3: Different levels of education will have different levels of intention to use e-Government systems/services.

3.3.1.4. Location

User location is a very important factor and was not involved in any of the previous models and theories in the e-Government adoption literature. It is crucial to provide government services to all users, either citizens or businesses, equally wherever they are. Moreover, it is a mandatory right for all users to benefit from the services that are provided by government whether they live in rural or urban areas; and this is considered as a challenge for governments. E-Government is an efficient way to enable users to access government services online from anywhere and this is one of the goals of successful e-Government. Thus, the EGAUM considers users' location as a fundamental factor that influences the adoption and usage level of e-Government.

In the context of Saudi Arabia, not all locations have government agencies and organisations that can provide government services for the people who live there. This challenge forces customers, either citizens or business representatives, to travel to the nearest city that has the required government agency; and this can be a costly and time-consuming exercise.

Furthermore, not all government organisations have offices in some of the smaller cities, and this also leaves customers with the travelling option. Therefore, it is suggested in this research that the location factor will have a significant impact on the *Intention to Use* e-Government. Additionally, the location factor is strongly related to the so-called 'digital divide'. The term 'digital divide' can be defined as "the fact that the world can be divided into people who do and people who don't have access to - and the capability to use - modern information technologies" (Rouse, 2005). The digital divide usually exists between people who live in cities and people who live in rural areas in countries like Saudi Arabia. It is another reason that encourages the researcher to explore the influence of location factor on e-Government adoption and usage and therefore, the following hypothesis (H4) was included:

H4: The user's location is related to the intention to use e-Government systems/services.

3.3.1.5. Income

Income is another personal factor that is likely to affect the intention to use e-Government systems. It is another factor that is not integrated independently in any of the e-Government adoption models in the literature. The EGAUM involves income as one of the Personal Factors (PF) that have a direct influence on *Intention to Use* e-Government systems (*ITU*) due to the following two scenarios suggested by the Saudi e-Government context. The first scenario is that low income could prevent users from possessing computers and digital devices that would enable them to access e-Government services online and thus, prevent them from adopting and using e-Government systems. The second scenario is that low income could prevent users from travelling to nearest city, in cases where they live in rural areas with no government offices, in order to access government services in person. This would mean that users would have to access the required government service with the online option using e-Government systems and thus, adopting and utilising e-Government would be increased. The income factor is thus integrated into the EGAUM to be investigated and explored in order to find out its impact on the usage and utilisation of e-Government systems and thus, hypothesis H5 was developed as:

H5: The user's income is related to the intention to use e-Government systems/services.

In the following section (Section 3.3.2), other important factors –i.e. the Motivational Factors (MF), will be explained and discussed in detail.

3.3.2 Motivational Factors (MF):

The Motivational Factors (MF) construct is one of the most important constructs that needs to be investigated and explored when analysing e-Government adoption and utilisation. This construct comprises five significant factors that are very likely to influence the level of use of e-Government systems. These factors are *Perceived Benefits* (*PB*), *Socio-Cultural* (*SC*), *Awareness* (*AW*), *Functional Quality of Service/System* (*FQS*) and *Previous Experience* (*PE*). Some of these factors are considered in some of the technology adoption models that have been used in a number of e-Government adoption studies; and some others are newly developed in this research's model (the EGAUM). However, those factors that are considered in several models in the technology adoption literature are integrated independently and in a more comprehensive manner in the EGAUM. This research is looking at these important factors with a wider view in order to analyse and investigate their influence accurately. It is suggested in this research that all of the Motivational Factors (MFs) have a direct and positive influence on *Intention to Use* e-Government (*ITU*). These relationships will be discussed clearly in the following sections. The Motivational Factors can be explained as follows:

3.3.2.1 Perceived Benefits (PB) factor

Perceived Benefits (*PB*) in the E-Government Adoption and Utilisation Model (EGAUM) can be defined as "to what extent that the user perceives that he\she will gain functional and non-functional benefits from using e-Government services over the traditional ways when performing governmental transactions". It is related to beliefs about gaining benefits and the expected outcomes of accessing e-Services using e-Government systems. The idea here is to analyse the influence of perceiving the advantages of using e-Government systems on the adoption and utilisation of such systems. The functional benefits refers to advantages related directly to the transaction\service itself: such as reducing the required procedures when performing transactions, complying with government regulations, finishing the transactions completely online, performing transactions quicker than with the traditional methods, minimising legal and regulatory violations when performing transactions and services, speeding up the processing of transactions (for employees) and increasing the productivity when processing e-Services and e-Transactions (for employees). For example, public users can apply for a driving licence online through the e-Government systems by filling the required online forms, attaching the required documents and paying the required fees online. This is a functional benefit, where the customers perform and complete the intended service electronically and completely online. On the other hand, the non-functional benefits refer to advantages related indirectly to the transaction\service itself such as it being more beneficial for the users in saving their time and effort and reducing their dependency on others such as intermediaries; equality assurance when processing customers' transactions; reducing multiple

visits to different agencies; increasing investment opportunities (for business sector) and increasing employees' commitment to work (for employees). For example, public users can avoid the crowds on the roads and the long queues in the passport unit by benefitting from e-Government systems which provide a passport renewal service online. Users also save time when using e-Government if they can speedily access this service from their home or office without wasting their time on the roads. Avoiding the crowds and saving time are considered as non-functional benefits.

As stated earlier, some factors in the EGAUM were integrated from other well-researched models in the technology acceptance literature, but with wider and more comprehensive consideration that is appropriate to the e-Government context. For example, Perceived Usefulness (PU) in the Technology Acceptance Model (TAM) has a similar meaning to the *Perceived Benefits* factor that is integrated into this research model (EGAUM). However, Perceived Usefulness (PU) that forms part of the TAM is limited in its scope, since it only measures the enhancement of the user's job performance within an organisational context when he/she uses a specific technology. This is how Davis, who is the developer of TAM, defined Perceived Usefulness (PU): "PU is the prospective user's subjective probability that using a specific application system will increase his or her job performance within an organisational context" (Davis et al., 1989). This is not fully applicable to the context of e-Government, since implementing e-Government systems has much wider potential for usefulness than just enhancing the job performance within a specific organisation. The scope of the *Perceived Benefits* factor in the EGAUM is thus clearer and more comprehensive since it measures the benefits and usefulness of using e-Government as a technology from a wider angle.

The Relative Advantage construct from the Diffusion of Innovation model (DOI) is also similar to the *Perceived Benefits* construct that is integrated into the EGAUM, but again has a limited scope. According to Rogers, the developer of DOI, Relative Advantage refers to the degree to which an innovation or technology offers benefits superior to that of its predecessor. This is also not fully applicable to e-Government adoption analysis, since we cannot measure the benefits which may be deemed superior to the e-Government's predecessor particularly for new e-Government services and systems. Although the models that suggest the perceived benefits of adopting a technology as a predictor and an influential factor on adoption level are limited in their point of view, their consideration of this factor indicates the importance of analysing such a factor when studying the adoption and utilisation of any technology such as e-Government.

Other research has also affirmed the importance of analysing the influence of the perceived benefits of a new technology on the adoption and utilisation of that technology. For example, Carter & Belanger (2005) state that citizens might adopt and use e-Government services

increasingly as they save time when performing tasks online. Moreover, Tung & Rieck assumed that cost-saving is a measure of e-Government efficiency; and which then leads to an increase in the adoption and utilisation level of e-Government (2005). Therefore, from the limitations that exist in some of the models in the literature regarding the analysis of the perceived benefits factor and also from the importance of such a factor reported in several studies, the EGAUM integrates *Perceived Benefits* as an independent and fundamental factor that can influence the acceptance and utilisation of e-Government systems. This research takes the view that the *Perceived Benefits* factor has a direct and positive influence on *Intention to Use* e-Government (*ITU*) and therefore, the following hypothesis (H6) was proposed:

H6: There is a positive relationship between perceived benefits and intention to use e-Government systems/services.

3.3.2.2 The Socio-Cultural (SC) factor

There is no doubt that social and cultural aspects have a strong impact on the implementation of a new technology, especially when that new technology is related to improving the society's lifestyle. The *Socio-Cultural* factor is a combination of two influential aspects; namely, the social and the cultural aspects. There is a strong correlation between them since one aspect has a power to change the other aspect i.e. the social aspect can affect and change the cultural aspect and vice versa. It is widely debated that social and cultural norms have a strong impact on the adoption of Information and Communication Technologies (ICTs). Many studies in the literature suggest that social and cultural aspects shape the perception of the users i.e. social and cultural norms can enhance or impede the adoption of the new technologies such as e-Government systems (Myers & Tan, 2002; Akkaya et al., 2012).

As stated earlier, the *Socio-cultural* factor combines two important influential factors which are social influence and cultural influence. In regards to the social influence, Weerakkody et al. defined it as "the normative pressure of associated members like family or friends that influences the intention to use e-government" (Weerakkodya et al., 2013). A number of studies in the literature found that social influence, which is represented by friends, family members and colleagues, has a strong impact on the users' adoption level of a new technology such as e-Government (Irani et al., 2009; Venkatesh & Brown, 2001).

In regards to culture influence, Ali et al. defined it as "values, beliefs, norms and behavioural patterns of a group–people in a society for national culture, staff of an organisation for organisational culture, specific professions for professional" (2009). Cultural influence is investigated widely in technology adoption literature and it is proposed that cultural norms have

a fundamental correlation with intention to use e-Government systems (Akkaya et al., 2012; Alateyah et al., 2013). Many aspects of social and cultural influence need to be investigated and analysed to find out their impact on the adoption and usage level of e-Government systems. The most important aspects that are suggested in this research can be explained in the following points:

- ***Image***

  Image is an interesting norm that is related to the socio-cultural aspect of any society. It refers to the users' perceptions that using and adopting e-Government system will make them superior to others in the society. In other words, interacting and conducting e-Services by using e-Government, instead of using the traditional method of going to government offices in person, is perceived to give these users superior status (Shareef et al., 2011). Image is a very important factor that can influence users' adoption of e-Government systems.

  Thus, many studies in the literature have included the image factor in their models to analyse technology adoption (Moore & Benbasat, 1991) and also to analyse e-Government adoption in particular (Tung & Rieck, 2005; Gilbert et al., 2004). Shareef et al. claimed that e-Government adoption might reflect the adopter's familiarity with modern technologies, proficiency in using computers and the Internet, a high level of modernism and a higher level of education; and that these phenomena add some degree of prestige and social value to the adopter (Shareef et al., 2011). This research suggests that these phenomena are even more influential in Saudi society. Therefore, Image is included in this research model (EGAUM) as an important aspect of the *Socio-Cultural* factor that needs to be investigated and explored.

- ***Influence of others***

  Apparently, it is now an admitted fact that "the most powerful influence on human behaviour is other people", this is what David Halpern, the director of the Behavioural Insight Team at the Cabinet Office in the UK, said at the Guardian Public Leaders Summit (Halpern, 2013). He stated that the power of social influence runs very deep, since whom we know and how we feel about them affects our behaviour. This reflects the importance and the influence of the people who the user knows; and this research proposes that people who the e-Government users know are very likely to increase or decrease their usage and adoption level.

  An example of the influence of the others on an individual's behaviour is outlined in David Halpern's team's recent annual report. They found that adding a single line in the letters to people who do not usually pay their tax boosted the payment rate by approximately 15%.

The line simply stated that 9 out 10 people in the area had paid their tax on time (Halpern, 2013). Similarly, what we think others are doing can be an influential factor on our behaviour and affect actions such as giving up smoking, stop dropping litter and giving money to charities.

In the Saudi context, the impact of others is also likely to be very influential since the society in the Kingdom of Saudi Arabia is interrelated and coherent. Most of the relationships between the family members and also the social relationships between different families and friends are strong. Therefore, it is suggested in this research that relatives, family members, friends, peers and colleagues are very likely to influence the users' adoption and usage of e-Government.

- ***Resistance to change***

  The adoption and usage of any new technology is greatly affected by the behavioural norms of the society since individuals may tend to resist the changes that technologies can make and this is likely to lead to negative consequences with regards to technology implementation (Watson et al., 1994). Resistance to change is considered one of the challenges that can face the successful implementation of any system, including e-Government systems. Some users might resist using e-Government due to trust issues while others might resist adopting e-Government because face-to-face interactions still make customers more confident (AlAwadhi & Morris 2009). The influence of this important aspect needs to be explored in order to understand its impact and relationship to the intention to use e-Government systems.

  Factors like resistance to change are likely to have a significant impact on e-Government acceptance and use due to certain cultural and social norms in Saudi Arabia. The Internet usage pattern in Saudi Arabia is a clear example of how resistance to change might influence the implementation of new technology. When Internet use began in Saudi Arabia in 1999, it faced a strong opposition because of the ability to access contents that were disapproved of freely and easily, which goes against the Saudi culture. However, after implementing a filter system that can prevent such contents being accessed, the Internet was finally available to the public (Alzahrani & Goodwin, 2012). Such resistance indicates the impact of the cultural and social aspects on the adoption and usage of new technologies. Therefore, the resistance aspect is taken into account in this research's model (EGAUM) in order to investigate its influence on the adoption and utilisation of e-Government systems.

- ***The influence of interpersonal social networks (Connections or Wasta)***

  In Arabic, *wasta* means the use of personal connections with certain employees or top managers who can accelerate processes or skip procedures in order to complete paperwork

and complete transactions. Hutchings & Weir (2006) stated that *wasta* is a force in all significant decision-making and it exists in the culture of many countries including Arab countries. Since e-Government will limit such negative practice as services will be treated electronically and all actions will be controlled and logged, some customers (including citizens and businesses) may resist the use of e-Government and continue to seek help from their personal connections instead. Thus, the influence of the users' perception about the ability of e-Government systems to reduce or eliminate such negative practice is considered in this study.

From the previous discussion of the influence of the *Socio-Cultural* factor on the adoption and interaction level with e-Government, it was felt important to integrate this crucial factor and its various aspects into the EGAUM as independent factor due to its power of impact. Unlike other models in the adoption literature which have considered social impact from a narrow point of view, this research will investigate and explore the effect of social and cultural norms in a more comprehensive manner. For example, Subjective norm (SN) in the TRA and Social influence in the UTAUT considered just a limited part of this factor; as only the influence of others was addressed in both models. Therefore, it is suggested in this research that the *Socio-Cultural* (*SC*) factor has a direct influence on *Intention to Use* e-Government (*ITU*) and thus, the following hypothesis was developed:

H7: There is a positive relationship between socio-cultural factor and intention to use e-Government systems/services.

3.3.2.3 The Awareness (AW) factor

The *Awareness* factor can be defined as the degree to which users are aware of e-Government services and its potential. It also includes to what extent different methods might influence the users' awareness. When implementing any interactive system, users must be aware of functions and services that this system can provide to them. Shareef et al. (2011) stated that perceived awareness is a strong contributor for adopting e-Government; thus, all governments who intend to implement e-Government system, especially in developing countries, need to be conscious of making users aware of and familiar with e-Government, particularly users in remote areas. Not doing so is very likely to create a severe digital divide and subsequent failure to achieve e-Government goals. In Shareef et al's study, users affirmed that awareness is very important for e-Government adoption (2011). Many countries are just at the beginning of implementing e-Government technology and taking the awareness factor into account is very important at the early stage in order to develop beliefs and trust (Limayem et al., 2007).

The *Awareness* factor involves many aspects including informing users about the transformation of public services, e-Government's mission and objectives, the e-Services and e-Transactions to be provided and the advantages and disadvantages of implementing and using e-Government (Shareef et al., 2011). These aspects are assumed to have a significant impact on the users' adoption and use of e-Government. This research also assumed that awareness is very likely to be improved in many ways such as interactive advertising, social media and even the traditional advertising methods. Social media can play a fundamental role in enhancing e-Government adoption and utilisation by increasing awareness levels; and some recent research has already begun to analyse the impact of social media on e-Government interaction (Abdelsalam et al, 2013; Zheng, 2013). The influence of the *Awareness* factor on the adoption and utilisation of e-Government will be explored and investigated in this research. This important factor has not been addressed by most of the technology acceptance and adoption models in the literature nor in many e-Government adoption studies. The following hypothesis (H8) was developed to measure the impact of this factor and its relationship with the intention to use e-Government systems.

H8: There is a positive relationship between awareness and intention to use e-Government systems/services.

3.3.2.4 The Quality of Service/System factor (Functional Quality and Technical Quality)

One of the purposes of developing the EGAUM as a comprehensive model is to fill the gaps left by the currently used models that exist in the literature of e-Government adoption and utilisation analysis. Quality of Service/System is not addressed in many technology acceptance models such as the TAM, PCI, DOI and UTAUT, despite its importance. However, some researchers have proposed this factor in their models, such as DeLone & McLean (2003) who developed the D&M information system success model. Furthermore, Alateyah et al. also addressed the importance of the impact of service quality on e-Government adoption in their research (Alateyah et al., 2013). Again, the influence of this factor was not fully and comprehensively explored and investigated in the e-Government context. Such a significant factor must be studied from different aspects in order to achieve accurate and practical results. Therefore, the impact of the Quality of Service/System factor is considered from two different perspectives in the EGAUM, namely, *Functional Quality of Service/System* (*FQS*) and *Technical Quality of Service/System* (*TQS*).

Functional Quality of Service/System (*FQS*) refers to the quality level of the functional aspects of a service that meet users' needs and promote users' satisfaction. This includes delivery and

payment options for the e-Services as well as the features that enhance service performance and users' satisfaction. *Functional Quality of Service/System* is a significant factor that must be studied from different aspects in order to obtain accurate and practical results. Delivery speed and delivery options for the required documents among government agencies and users are considered to be important functional aspects that reflect the quality of the provided e-Services which can influence adoption and usage levels. Some e-Government services require some documents from the users to be processed; and, the outcomes of some e-Services are tangible - such as driving licences and passports. Thus, correspondence between the users and governmental agencies requires sufficient and efficient mail services to fully express the high quality of e-Services and meet users' needs. Unfortunately, this functional aspect of having multiple and reliable post services is very limited in Saudi Arabia; thus, exploring the impact of this limitation on the users' adoption and use is important.

The variety of payment options is another functional aspect that reflects the high quality of the e-Services and e-Transactions provided. The importance of this aspect needs to be explored and investigated in order to realize its impact on e-Government adoption and usage. Its importance is emphasised particularly in the context of Saudi Arabia where the online payment options are limited. There is a payment system called 'SADAD' which is considered as an intermediary between banks and billers but still with limited functionalities (Gharawi, 2011). SADAD is the only payment method that can be used for government services and transactions payments. The influence of users' perceptions about this lone payment system on their adoption and use will also be involved in the measurement of this factor.

Customer care is another important functional aspect that is related to the quality of the service. It involves seeking customer feedback and ensures their satisfaction with e-Services quality, and this requires the users' ability to electronically evaluate and rate the provided e-Services and e-Transactions. Providing customer care services that are dedicated to serving certain users such as users from the business sector and also the ability to appeal online in case of transaction rejection are also important aspects of customer care. Other functional aspects are also crucial in terms of expressing a high quality of e-Service, including the ability to view the previously performed services and transactions online, the ability to track the status of the conducted e-Services and e-Transactions online and also communicating with users regarding the status of these e-Services and e-Transactions. Furthermore, the functional quality aspects can also influence the adoption and use by government employees when using e-Government systems to process transactions; and this includes the ability of e-Government systems to reduce mistakes made when processing customers' transactions, which usually occur with paper-based work. The users' perceptions about the functional quality aspects are measured to investigate and explore their impact on the adoption and utilisation of e-Government systems. It was proposed

that the *FQS* factor is one of the Motivational Factors (MF) that has a direct relationship with the users' intention to use e-Government, and thus, hypothesis H9 was proposed as follows:

H9: There is a positive relationship between functional quality of service/system and intention to use e-Government systems/services.

Technical Quality of Service/System (*TQS*) is another form of quality of service/system that needs to be addressed when analysing the adoption and usage of e-Government systems. It refers to the quality level of the technical aspects of a service that are visible to the users; and which can affect their willingness and intention to adopt and use the e-Government systems. This factor will entail investigation of the influence of technical errors on the users' intentions to adopt and use. Such technical errors include links not working, server errors and slow webpage response, as well as the technical errors that appear to users while they are using the system. The technical aspects also include the design and layout of e-Services interfaces and the influence of this aspect on the users' adoption and use will be measured as E-Government websites and interfaces are the interaction mediators between the e-Government system and its users. E-Government users are expected to have significantly different technology skills and abilities; therefore, e-Government websites and interfaces must be designed with users' requirements and needs in mind, i.e. based on a user-centric approach, in order to achieve satisfactory acceptance and utilisation. E-Government interface design includes web page layout, design consistency, colour contrast, the use of flash, being free of spelling errors, clear font, clear labels, searchable contents and multiple languages. These are all criteria that need to be addressed when designing e-Government interfaces. We can see the results of considering such design criteria in Dubai's e-Government system, which is considered a successful e-Government in the Middle Eastern region. Dubai's e-Government developed the E-Service Delivery Excellence Model and the Government Websites Excellence Model (GWEM) that are strictly addressed in the e-Government web pages and interface design (Dubai Smart Government, n.d.). Due to the importance of the quality of e-Government interface design, this research will explore and investigate the influence of this aspect on the adoption and utilisation of e-Government in Saudi Arabia.

The *TQS* factor also involves investigating the influence of several technical features that reflect the high technical quality of e-Government systems. These include providing the expected time for e-Transaction processing, the last update time of the e-Services websites, the time of the last performed e-Transactions and the emergence of alert\confirmation messages when using e-Government systems. All the aforementioned aspects and features reflect the technical quality of the e-Services and e-Transactions provided and they are proposed to have an impact on the

users' adoption and utilisation. Thus, *TQS* was categorized as a separate relevant aspect of the Technical Factors (TF) construct. *TQS* was proposed to have a direct relationship with the users' intention to use e-Government and therefore, hypothesis H12a was developed for this factor:

H12a: There is a positive relationship between technical quality of service/system and intention to use e-Government systems/services.

Moreover, *TQS* was also proposed to have relationship with the users' perception about the readiness of the implemented e-Government systems and hypothesis H12b was also developed to explore this influence:

H12b: There is a positive relationship between technical quality of service/system and perceived e-Readiness of e-Government.

3.3.2.5 The Previous Experience (PE) factor

Previous Experience is another important factor that has been addressed in the EGAUM. It refers to the experience that users have encountered in the past regarding e-Services. In this research, two suggestions have been proposed about the influence of previous experience. Firstly, previous experience gained from using online applications and services such as e-Business services, e-Commerce services, online banking, online shopping and online payments. The idea here is that if the user encountered any obstacle while he/she was using any of these services, such as buying items online or transferring money online, he/she might expect the same problem when using e-Government. E-Government adoption and usage level will therefore be influenced and decreased. On the other hand, if the user was satisfied and did not encounter any problems while using online applications and services, it is likely that this would positively influence his/her adoption and use of e-Government.

The second suggestion is related to the previous experience of using e-Services and e-Transactions provided by e-Government itself. In other words, positive and negative results of using e-Services and e-Transactions provided by e-Government systems are likely to have an impact on the future interactions with e-Government systems. For example, if a user made use of an e-Service such as changing their address in different government organisations and agencies using an e-Government system and this e-Service was completed successfully, he/she would be more confident when using another e-Government service in the future. Thus, the adoption and usage level is likely to be increased. Conversely, there would be a lack of

confidence if the user encountered obstacles when using e-Government services. In the previous example, if the address was not changed in all relevant government organisations, the user would lose the trust in e-Government efficiency; and therefore, his/her adoption and use are likely to be negatively affected.

This important factor is included in the EGAUM in order to explore and investigate its relationship with the intention to use e-Government system. To the best of the researcher's knowledge, no model in the literature has considered this factor as an independent factor. There are some studies which have integrated experience as a moderator that can modify the impact of other factors such as the influence of other people's experiences and the influence of experience of seeking help from systems technical support (Alshehri et al., 2012; Venkatesh & Bala, 2008 and Venkatesh & Davis, 2000). Although the experience of other people and the experience of resolving technical problems by technical support are important, we cannot ignore the strong influence of the previous experiences of using the same or even similar systems. The impact of other people's experiences and technical support experience are not neglected in the EGAUM, but they were addressed under appropriate categories namely, the *Socio-Cultural* factor, which was already discussed earlier (in Section 3.3.2.2), and the *Quality of Service/System* factor which was also discussed (in Section 3.3.2.4.). To investigate the influence of the *Previous Experience* (*PE*) factor, the following hypothesis (H10) is proposed:

H10: There is a positive relationship between previous experience and intention to use e-Government systems/services.

3.3.3 Technical Factors (TF)

Technical Factors (TF) is another important construct that has been developed in the EGAUM. In any interactive information system, there will be technical aspects that need to be addressed and taken into account in order to achieve the desired goals of implementing such systems. E-Government is one of those information systems where the technical side requires more attention due to the large number of users. The adoption and usage level of those users is very likely to be affected by the system's technical issues. Unlike many other studies in the literature, which focused on the technical infrastructure related to the implementation of an e-Government system, such as network infrastructure and required applications, the focus of this research is on the users' perceptions and beliefs about the technical aspects and the influence of such aspects on their adoption and willingness for interaction, which is one of the key reasons for the success of e-Government systems (Alateyah et al, 2013; Chanchary & Isalm, 2011). The technical

factors that are addressed in the EGAUM are *Perceived Simplicity* (*PS*), *Technical Quality of Service/System* (*TQS*) and *Accessibility* (*ACC*). *TQS* was discussed in Section (3.3.2.4.).

3.3.3.1 The Perceived Simplicity (PS) factor

In this research, Simplicity refers to the extent that e-Government systems are easy to use. It also includes the influence of some aspects that make this use easy and simple. It has been said that the more an information system is easy to use, the more users will adopt it and use it. This relationship is especially important in large systems such as e-Government, where large numbers of users are expected to use it and their skills and abilities are significantly different. Several models and theories in the literature supported and affirmed the importance of this factor. For example, the Technology Acceptance Model (TAM) integrated a construct called Perceived Ease of Use (PEU) (Davis et al., 1989), which is similar to the *Perceived Simplicity* (*PS*) concept that is integrated in the EGAUM. Moreover, the Diffusion of Innovation theory (DOI) proposed a construct called Complexity (Rogers, 1995), that is also similar to the *Perceived Simplicity* (*PS*) concept from the EGAUM. Furthermore, Venkatesh et al. created their Unified Theory of Acceptance and Use of Technology (UTAUT) with a construct called Effort Expectancy (Venkatesh et al., 2003), that is a similar concept to that of the Perceived Simplicity factor. However, this research considers this factor from a wider point of view and from different perspectives.

For example, the *PS* factor will measure the influence of users' perceptions and beliefs about the simplicity of using e-Government systems instead of traditional methods on their willingness to adopt and use such systems. This also includes the impact of perceived concentration and effort that the users need when using e-Government systems on their adoption and utilisation. The *PS* factor will also investigate and analyse the degree of importance of several simplicity aspects. The simplicity aspects refer to information and features that can make the use easier and simpler; for example, providing descriptions that explain to users what the intended e-Service is, how to apply for it, what the e-Service requirements are and what the expected outcomes of conducing the intended e-Service are. These are all important aspects that make such use easier and simpler. From reviewing some Saudi e-Government services, some of them were briefly described, but most of them were not explained or described clearly. Moreover, aspects like the requirements of the e-Services, the process steps and the expected outcomes were not mentioned in many of the e-Services provided online by the Saudi e-Government. A positive experience of these aspects is likely to lead the users to a better and easier experience which then positively affects their acceptance, adoption and usage level. Furthermore, providing hints and examples about how to use an e-

Service and what information is required is also important in helping the users to make use of the e-Service easily and successfully; and is also considered to be one of the simplicity aspects involved in the *PS* factor.

It is suggested in this research that users' adoption and interaction are significantly affected by their perceived simplicity of e-Government systems. The simplicity of such interactive systems is very likely to increase and enhance the users' adoption and interaction. There are many useful guidelines and criteria that can be applied in order to reach to a high level of simplicity, such as the Web Content Accessibility Guidelines (WCAG) published by The Worldwide Web Consortium (W3C) (Al-Khalifa, 2010; W3C n.d.). Moreover, any government can develop its own guidelines for implementing e-Government systems such as the GWEM guidelines developed by the Dubai government (Dubai Smart Government, n.d; Abanumay et al, 2005). The inclusion of the concept of the Perceived Simplicity factor in several technology acceptance models including the TAM, DOI and UTAUT affirms its significance. Therefore, it is proposed in this research that the PS factor will have a direct and positive impact on the users' intention to use e-Government and also a direct impact on the user's perceived e-Readiness of e-Government systems; and two hypotheses were proposed for this factor as follows:

H11a: There is a positive relationship between perceived simplicity and intention to use e-Government systems/services.

H11b: There is a positive relationship between perceived simplicity and perceived e-Readiness of e-Government.

3.3.3.2 The Accessibility (ACC) factor

Similar to several factors that have been discussed earlier in this chapter, the impact of *Accessibility* to e-Government services and systems on the adoption and utilisation level was not fully explored and investigated in the literature, particularly in developing countries including Saudi Arabia. Accessibility is another technical factor that refers to the users' ability to access e-Government services and systems i.e. the degree to which the e-Government systems and services are accessed with relatively little effort. Some common models in the literature, such as the TAM and DOI, did not address this important factor; some others, such as the UTAUT, have considered it but from a general point of view as a facilitating condition.

This research aims to investigate and analyse the influence of the ease of access to e-Government services and systems; and, the impact of accessibility methods and options on e-Government adoption and utilisation levels will also be analysed. Several important aspects that

are related to e-Government accessibility will be addressed in this research. These aspects include the role of intermediaries in e-Government accessibility. An intermediary can be defined as any private or public organisation that can facilitate the communication and coordination between the public services providers and users (Janssen & Klievink, 2009). Many users are bound to be excluded from benefiting from e-Government services due to some access barriers such as limited access to the Internet and computer illiteracy (Margetts & Dunleavy, 2002). Therefore, many governments have started to search for solutions and strategies to enhance accessibility to e-Government to increase adoption and utilisation levels (Phang et al., 2005).

In this regard, Al-Madinah, which is a large city in Saudi Arabia, has introduced so-called 'intermediary organisations' or 'e-offices' which are operated under the Saudi Government legislation and authorization. They are physical intermediaries (organisations) that help people who have difficulties in using e-Government such as Internet access limitations, computer illiteracy and inability to pay online. Thus, these intermediaries access government e-Services on behalf of users and also pay any fees for these services; users can then pay cash to the e-office. The influence of intermediaries has been studied by Al-Sobhi et al. and the results show that intermediaries are a very useful channel to improve the e-Government adoption and utilisation (Al-Sobhi et al., 2013). However, this study was conducted only in Al-Madinah, which is not enough to explore the influence of such solution. The role and the impact of intermediaries on e-Government adoption and usage will be investigated and analysed more thoroughly in this research; and will cover intermediaries in different cities in order to come up with more comprehensive results.

With the spread and popularity of mobile communication devices such as Smart phones and tablets, e-Government has become more accessible and adoptable in many countries (Hung et al., 2013). It is clear nowadays that mobile devices have a very positive impact on many interactive systems and technologies such as e-Commerce and e-Business. This is because most people use these mobile devices most of the time, so accessibility to interactive systems is high. Thus, providing mobile applications for e-Government services, or so-called M-Government, would ease accessibility of government e-Services. M-Government would help to provide e-Services to customers in remote areas, customers with low computer skills and customers with chronic illnesses (Becker, 2009). Therefore, the importance of providing an m-Government approach to the adoption and utilisation of e-Government systems is also involved in measuring the impact of *ACC* on users' intention to use.

Additionally, the *Accessibility* factor is proposed to be an influential factor on employees' adoption and use of e-Government systems in their work. This includes their ability to

electronically access different agencies' systems when processing customers' transactions; as well as the impact of providing efficient ICTs to access e-Government systems. It is suggested in this research that all these aspects that are related to accessibility are likely to have an influence on the users' intention to use e-Government systems and also on the e-Readiness perception of e-Government. Thus, two hypotheses (H13a and H13b) are proposed for this factor:

H13a: There is a positive relationship between accessibility and intention to use e-Government systems/services.

H13b: There is a positive relationship between accessibility and perceived e-Readiness of e-Government.

3.3.4 Reliability Factors (RF)

Factors that are related to reliability are also crucial when implementing interactive systems such as e-Government services and systems. This fundamental construct has not been addressed in many studies in the e-Government adoption literature. Thus, it was proposed as a main construct in the EGAUM. This construct comprises two important factors which are the *Perceived Trust* (*PT*) and *Regulations & Policies* (*RP*) factors.

3.3.4.1 The Perceived Trust (PT) factor

In an e-Government context, trust plays a vital role in helping users to overcome uncertainty about risks perceived to exist with online services. *Perceived Trust* can strongly affect users' willingness to share their personal information and perform online transactions when using e-Government systems. It is a significant factor that needs to be investigated in order to understand and analyse its impact on e-Government adoption and utilisation. Although trust has been studied and shown to be an important factor in technology acceptance literature, there is still lack of sufficient research that investigates and analyses the influence of trust in e-Government usage and adoption especially in developing countries (Alsaghier et al., 2009; Carter & Belanger, 2005 and Pavlou & Fygenson, 2006).

Trust can be defined as "an individual's belief and expectation that another party will perform a particular action that is important to the trustor in the absence of the trustor's control over the trustee's performance" (Mayer et al., 1995). Trust is a crucial norm in many interactions and practices including financial transactions and social dealings (Al-adawi et al., 2005). In this research, the impact of trust perception on the interaction with e-Government systems will be

investigated from three important aspects, which are: trust in the mediator (Internet), trust in the tool (e-Government system) and trust in the provider (government organisations and agencies).

- ***Trust in the Internet***

  Due to the open nature of the Internet as a communication infrastructure, trust is considered as a fundamental element that needs to be investigated and explored when implementing online applications such as e-Commerce and e-Government (Cheskin, 1999). When interaction between users and an e-Government system occurs through the Internet, trust in the mediator (the Internet) becomes a significant factor that needs to be explored and measured (Carter & Weerakkody, 2008). Therefore, trust in the Internet is addressed in the *Perceived Trust* (*PT*) factor.

- ***Trust in e-Government systems***

  Trust in the e-Government system can be determined from the initial use of e-Government services. The relationship between users and e-Government systems needs to be critically analysed since the first impression of using e-Government services will either positively or negatively influence its future adoption and use. It is assumed in this research that if users feel safe when using e-Government systems and believe that such systems are highly secure, their trust in e-Government systems will be high and this will therefore be reflected in their subsequent adoption and use. Users are usually concerned about sharing, exchanging and storing their personal information online especially when financial information is involved (Shareef et al., 2011). Implementing successful e-Government with high security standards that users can feel confident of will decrease these concerns and at the same time will increase the users' trust in the e-Government system. It is assumed in this research that implementing a high standard of security is not enough to increase the users' trust, but that enhancing the feelings of safety and confidence is what is crucial.

- ***Trust in the provider***

  It has been argued in the literature that a necessary condition for e-Government adoption is trust in the body which provides the online service (Teo et al., 2008). Trust in the provider can be determined by the ability of the intended governmental agency to serve the users online. When users access online services that are provided by a particular government agency and that agency completes their transactions successfully and satisfactorily, users' trust in these service providers would very likely be high. Therefore, their adoption and usage level will be increased. Moreover, achieving user satisfaction and completing their transactions successfully in off-line services, i.e. when users make use of government services in person, would also be likely to positively influence the trust level in the provider of these services.

Additionally, the *Perceived Trust* (*PT*) factor involves two other crucial aspects in terms of e-Government reliability, which are perceived security and perceived privacy. Security and privacy are two significant factors that need to set and achieve high standards in any interactive system, especially when systems involve public users, such as e-Government systems. In order to increase the adoption and usage level of information systems and applications, users need to feel safe when interacting with these systems. Security and privacy include many aspects such as highly secure databases of users' information, secure communications when financial transactions are involved, the prevention of any misuse of users' information and not sharing users' information with other parties without their knowledge and permission (Shareef et al., 2011).

Kalakota & Whinston (1997) defined perceived lack of security as "a threat that creates a circumstance, condition, or event with the potential to cause hardship to data or network resources in the form of destruction, disclosures, modification of data, denial of service, and/or fraud, waste and abuse". Security that involves the implementation of advanced technologies such as cryptography, secure electronic signatures and certificates would have a positive impact on the intention to use online services (Kim et al., 2008 and Lian & Lin, 2008). What is relevant in this research is not the implementation of technical security technologies in e-Government systems, but rather the users' perceptions about risk and security i.e. the users' sense of security when using e-Government online services.

Perceived lack of privacy refers to the possibility that the individual's data and information that is provided to e-Government systems could be inappropriately used or shared without permission. There is growing concerns regarding the privacy of information given online. Users are reluctant to provide personal information when it is requested online, since they have concerns about the misuse of information sent over the Internet (Roca et al., 2009). In e-Commerce for example, online consumers hesitate to provide personal and financial information to companies over the Internet because they feel that these companies could make unauthorized use of it or even reveal it to other parties (Lim, 2003).

Implementing high standards for security and privacy is crucial, but it is not enough to increase the adoption and utilisation level. Users need to feel confident of the implementation of high security and privacy standards by these being published, by receiving confirmation of e-Service transactions, by more security criteria being provided when conducting financial transactions and by informing the users when the e-Service requires to share his/her information and requesting permission to do so. Such measures increase the security and privacy perception and thus the users' adoption and usage of e-Government. Many studies in the literature found that perceived security and perceived privacy are major concerns for Internet users when interacting

with websites and online services (Angst & Agarwal, 2009 and Shareef et al., 2008). It is assumed in this research that trust, security and privacy aspects can play a vital role in the adoption and utilisation of e-Government services and systems. They are also believed to have an impact on the *Perceived e-Readiness* of e-Government, which then has an indirect relationship with the users' intention to use. The significance of this factor comes from the fact that trust can be built from the first impression, possibly be affected later by any shortcomings and also be hard to regain, particularly in an uncertain and virtual environment. Thus, this research aims to investigate and analyse the influence of trust perception on the adoption and use of e-Government services and systems from different perspectives and thus, two hypotheses (H14a and H14 b) are proposed:

H14a: There is a positive relationship between perceived trust and intention to use e-Government systems/services.

H14b: There is a positive relationship between perceived trust and perceived e-Readiness of e-Government.

3.3.4.2 The Regulations and Policies (RP) factor

In order to gain satisfactory interaction and usage of any interactive information system, strict usage regulations and policies must be introduced. The importance of setting up clear and strict regulations is emphasised when it comes to implementing huge public systems such as e-Government. The *Regulations and Policies* (*RP*) factor refers to the influence of implementing strict and clear regulations and policies for using e-Government systems; and is related to the importance of setting up regulations that control the use of e-Government services and ensure that all parties are protected and their rights are reserved. It includes information about security policies, privacy policies, terms and conditions and usage rules; as well as the regulatory procedures that are related to the government services provided through e-Government systems. These are examples of regulations that must be introduced not just for e-Services providers' records, but also need to be published for the public users, in order to inform them about their rights and increase their confidence about the reliability of the system. Such regulations are significant due to the nature of an e-Government system, since it deals with important data including users' personal information, payment information and government information.

From reviewing some Saudi e-Government services, clear and strict regulations were not introduced and published for the users. Saudi e-Government providers may have such regulations and laws for the provision and use of e-Government but, as stated earlier, publishing them, or at least publishing what is of interest to users, is significant and important. In Dubai's

e-Government, which is similar to the Saudi Arabian context and culture, regulations for e-Service provision and usage are published. Even the guidelines that need to be applied by e-Services providers are published, and include setting up usage terms and conditions, policies for e-Government website accessibility, data protection policies and users' rights (Dubai Smart Government, 2011). This is very likely to be one reason for Dubai's e-Government success and its high usage.

In common with many factors discussed earlier in this chapter, the *Regulations and Policies* (*RP*) factor was not integrated in any technology acceptance model. Moreover, it was not addressed by most e-Government adoption studies in the literature. The EGAUM considers the influence of the *Regulations and Policies* factor as an independent variable and it is assumed that it has a direct impact on the users' intention to use, and also on their perception of the e-Readiness of e-Government which in turn influences e-Government adoption and utilisation. In this research, two hypotheses were developed for this factor which are H15a and H15b:

H15a: There is a positive relationship between properly implementing regulations & policies and intention to use e-Government systems/services.

H15b: There is a positive relationship between properly implementing regulations & policies and perceived e-Readiness of e-Government.

3.3.5 Perceived E-Readiness (PER)

Perceived E-Readiness (*PER*) is a dependent variable that is proposed in the EGAUM, and refers to the users' perceptions about the capacity and readiness of the public sector to provide and implement successful and satisfactory e-Government services and systems. The technological and telecommunications infrastructure and the level of human resources development are crucial in terms of e-Readiness perception (Alateyah et al., 2013). Thus, this variable was proposed to correlate with factors that are the responsibility of government agencies, namely, Technical Factors (TF) and Reliability Factors (RF). Therefore, all the factors involved in both constructs (TF) and (RF) were proposed to have an impact on and relationship to the users' perception about the e-Readiness of e-Government services and systems. Moreover, the users' e-Readiness perception was proposed to have influence on their intention to use e-Government services and systems in the EGAUM. Thus, the following hypothesis (H16) was proposed:

H16: There is a positive relationship between perceived e-Readiness of e-Government and intention to use e-Government systems/services.

3.4 The utilisation of the research model (EGAUM)

As stated previously, the EGAUM was the result of a critical analysis of the common technology acceptance models utilised in most of the recent e-Government studies. A number of significant factors in these common models were integrated into this research model, albeit with a broader insight. For example, the *Perceived Benefits* factor in the EGAUM is similar to the concept of Perceived Usefulness in the TAM and to Relative Advantages in DOI, but has a wider interpretation. Moreover, the *Perceived Simplicity* factor is more comprehensive than Ease of Use in the TAM and Effort Expectancy in the UTAUT.

Additionally, several key factors included in the EGAUM have not been addressed in most of the e-Government adoption and usage studies, especially those that were conducted in developing countries. This is because most of the e-Government adoption studies have utilised common technology acceptance models in the e-Government context that originally lacked many fundamental factors. These important factors have been added in this research model as independent factors, and include Cultural Influence, Personal Factors Influence, Awareness influence, Previous Experience Influence, the influence of Functional and Technical Quality of Service/System, Perceived Trust influence and Regulations and Policies influence.

This research model has been proposed and developed in a comprehensive and clear manner to provide a scientific framework for the analysis of e-Government adoption and utilisation. Moreover, the EGAUM is a universal model, which means that it can be utilised in countries other than Saudi Arabia. It can also be adapted and used to analyse the adoption and utilisation of different interactive systems and various service applications because it addresses influential factors that are crucial in such analysis.

All the factors that have been discussed in this chapter were grouped in a systematic way to form the research framework (EGAUM) that was presented in Section 3.3. earlier in this chapter. The proposed framework will be utilised as a base for data collection and analysis to validate its applicability for the context of e-Government adoption and utilisation which is one of this research's objectives and contribution. The EGAUM will also be used to investigate and analyse key factors that influence users' adoption and use of e-Government services and systems from different users' perspectives including citizens and users from the business sector, as customers and targeted stakeholders, and also that of the government employees who use such systems to provide and process e-Services and e-Transactions.

3.5 Conclusion

This chapter has developed the research's conceptual model which is the E-Government Adoption and Utilisation Model (EGAUM). Firstly, a critical review of the most common models and theories used in e-Government adoption literature was provided as a first step to developing a more appropriate and comprehensive model. Secondly, the salient factors that influence users' adoption and utilisation were identified. Fifteen factors have been proposed in this chapter and these factors have been grouped into four main constructs based on the nature of each factor. These four constructs are Personal Factors (PF), Motivational Factors (MF), Technical Factors (TF) and Reliability Factors (RF). All the proposed factors were defined and explained in this chapter alongside the most dominant aspects that might be involved in the influence of each factor. Furthermore, sixteen hypotheses have been developed to explore and explain the influence of the proposed factors on the users' intention to adopt and use e-Government services and systems in Saudi Arabia. These hypotheses will be assessed from three different users' perspectives, namely, the citizens' perspective, government employees' perspective and business sector users' perspective. The next chapter (Chapter 4) will explain the methodology adopted to achieve these research objectives.

Chapter Four: Research Methodology and Design

4.1 Introduction

In Chapter Two, an extensive review was made of various and related aspects of e-Government and technology acceptance literature. Chapter Three then proposed a theoretical framework that aimed to understand and investigate factors influencing the adoption and use of e-Government services and systems. The most appropriate research methodology and design needed to be based on the literature review and the proposed theoretical framework. Therefore, this chapter addresses important choices, resources and information about research design principles to help choose and utilise the right methodology considering the nature of the research problem, its objectives, the available resources and the required analysis. There are several research approaches, methods and techniques that could be used in the research design; however, the choices made about this research methodology were based on the research aims and context. As already stated, the research objectives are to develop an appropriate framework for e-Government adoption and utilisation analysis and to identify the factors that influence the adoption and use of e-Government systems and services from different perspectives.

This chapter will review different research approaches that involve research philosophies, research designs and research methods. It will also present the research approaches that are used in this research and the techniques and procedures involved in the data analysis.

The difference between research methods and research methodologies need to be clarified before going into the details of this chapter. The methods refer to the techniques used in a research which represent the instruments of data collection such as questionnaires, interviews and observations; whereas the research methodology refers to the study of the methods involved in research (Bryman, 2008). In other words, the research methodology is the philosophical foundations of the research whereas the research methods are the data collection methods utilised in the research (Doolin, 1998). Remenyi et al. (1998) defined the research methodology as the procedural framework within which to conduct research. Al-shehry et al. (2006) stated that the choice of appropriate research methodology is a requirement for obtaining high quality final results. However, there is no one optimal choice of research methodology and each research design will have pros and cons and thus, a series of compromises are normally involved in choosing the research design (McGrath et al., 1982).

There are several aspects that need to be considered when selecting and designing the research approaches and such aspects include the research topic, the research objectives, the research questions, the type of investigation, the researcher role, the location of the conducted study and

the time frame allocated for the study (Yin, 2003; Abdullah, 2013 and Sekaran & Bougie, 2011).

4.2 The Research Design

The research design can be defined as the guidelines and instructions that are followed in order to obtain the final results and findings that address the research questions and objectives. Crotty (1998) identified four principles to design research which are: the research philosophy, the research approach, the research strategy and the research method. Each principle will be briefly presented in the following sections.

4.2.1 The research philosophy (Positivist and Interpretivist approaches)

The term 'philosophy' is used in a very wide sense to describe views, beliefs and values (Kroeze, 2011). The philosophy of research involves the basic beliefs we hold about the world we live in; and there are two aspects of these beliefs which are ontology and epistemology (Burrell & Morgan, 1979). Ontology is concerned with nature of reality (Saunders et al., 2009); and it basically refers to social phenomena having an existence independent from its social actors. On the other hand, epistemology concerns the study of knowledge and what we accept as being valid knowledge. In other words, it is concerned with how things work and what are the best ways to obtain knowledge (Denzin & Lincoln, 1994).

Saunders et al. (2009) stated that the term 'philosophy' "relates to the development of knowledge and the nature of that knowledge" and this is the aim of conducting research i.e. to develop knowledge in a particular field. This research aims to develop a comprehensive framework to analyse e-Government adoption and use and to utilise this framework to investigate and understand factors that influence the users' adoption and use of e-Government systems and services. Therefore, knowledge is developed by proposing this conceptual and comprehensive model, as well as by identifying the salient factors affecting the e-Government adoption and use from different perspectives.

Saunders et al. (2009) divided research methodology into four main paradigms. They are positivism, realism, interpretivism and pragmatism. They also categorised all the research approaches in a simple and comprehensive form which is called the research onion diagram, (see Figure 4.1).

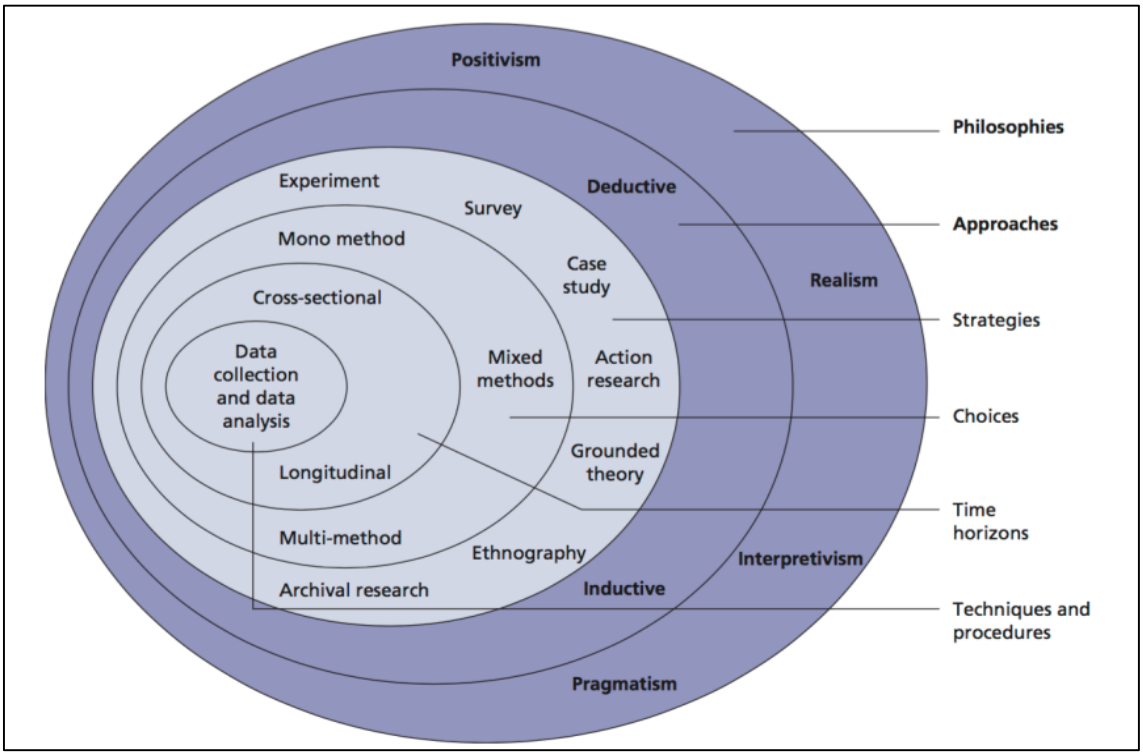


Figure 4.1: The research onion diagram (Saunders et al., 2009).

Information Systems (IS) is a multi-disciplinary field that involves different aspects including behavioural sciences, mathematics, engineering and the natural sciences. Thus, researchers in the IS field have a wide choice of research method, approach and strategy that are appropriate for their research since the IS field is not related to a single theoretical perspective (Orlikowski & Baroudi, 1991). However, the positivist and interpretivist approaches are considered to be the main philosophical approaches used in Information Systems research (*ibid*, 1991).

4.2.1.1 Positivism

The positivist approach comes from the idea that reality is independent from the investigation. Thus, its objective is to accept or reject theories according to the results of empirical research. Positivism considers research as a logical and scientific process that provides precise results to explain social phenomena; and is thus grounded on the existence of pre-defined relationships within a phenomenon which are investigated empirically with structured instruments (Orlikowski & Baroudi, 1991). Myers (2009), states that Positivism aims to test theories using hypotheses; and that the positivist approach "assumes that reality is objectively given and can be described by measurable properties". The positivist approach is usually linked with the quantitative approach and it follows methods related to the natural sciences to study social reality (Bryman & Bell, 2003a). We can call research positivist if it has propositions, measureable variables and hypotheses that would draw inferences about the phenomenon from a

sample to a population (Orlikowski & Baroudi, 1991). This research employs mainly the positivist approach since it aims to provide evidence for propositions, as discussed in Chapters 2 and 3, develop the variables and hypotheses which were presented in Chapter 3 and assess and investigate these hypotheses and variables (which will be presented in Chapters 5, 6 and 7).

4.2.1.2 Interpretivism

Interpretivism is an approach that considers social research as different to scientific or natural research (Bryman, 2008). It attempts to interpret subjective understanding to explain social action (Saunders et al., 2009). In this philosophical approach, access to reality is achieved through social actors and their constructions (Bryman & Bell, 2011b). Walsham (1993) described interpretivism as an approach that aims to "understand the context of the information system, and the process whereby the information system influences and is influenced by the context" (Walsham, 1993). Interpretivism is thus usually related to the qualitative and inductive approaches, which can provide deep insight into social phenomena. However, it lacks the ability to generalise the findings to the larger population (Winfield, 1991). Although this research mainly employs the positivist approach, there are some aspects of the interpretivist approach involved. Short semi-structured interviews have been conducted as part of this research, which demonstrates how a qualitative approach can be used to better understand and investigate the factors that influence users' adoption and use of e-Government systems and services.

Hence, this research mainly relies on the positivist approach as a research philosophy in addition to the employment of some elements from the interpretivist approach. As stated earlier, IS research does not adhere to a specific philosophical approach and the researcher is able to choose what suits the research aims and objectives (Orlikowski & Baroudi, 1991). However, in previous IS studies, more than 75% of the research followed the positivist approach whereas 17% followed the interpretivist approach and 5% followed other schools of thought, such as Critical Research (Mingers, 2003). Table (4.1) below summarizes the characteristics of each philosophical approach.

Table 4.1: Summary of Positivist and Interpretivist Characteristics.

Approach	Description	Characteristics	References
Positivism	Positivism attempts to test theory in order to provide and increase the understanding of a phenomenon. An IS study can be classed as positivist if it involves a defined framework and evidence of propositions, measures of variables, hypotheses testing and conclusions created from the findings about the phenomenon.	• Assumes that the reality is objective and can be described and understood by measured properties. • The researcher is independent from the studied phenomenon. • It is linked with numerical data (quantitative). • It attempts to test theory by testing hypotheses. • Data is precise and specific. • It is linked with the deductive approach. • It attempts to generalize the findings to the larger population.	(Orlikowski and Baroudi, 1991), (Myers, 2009), (Bryman & Bell, 2003a), (Yin, 2003), (Bryman, 2008), (Creswell, 1998).
Interpretivism	Interpretivism attempts to understand a phenomenon from the meanings that people assign to them. The interpretivist approach in IS research aims to "understand the context of the information system, and the process whereby the information system influences and is influenced by the context"	• Assumes that reality is accessed through social actors and constructions. • Describes and interprets a phenomenon through meanings that people assign to them. • The researcher is part of the phenomenon being studied. • It is linked with qualitative approach. • It is associated with an inductive approach. • Is concerned with theory generation (in contrast with positivism where there is pre-defined theory).	(Walsham, 1993), (Orlikowski & Baroudi, 1991), (Bryman & Bell, 2011b), (Bryman, 2008), (Yin, 2003), (Creswell, 1998).

As mentioned earlier in this section, the research aims and objectives as well as the research context mean that the positivist approach is mainly followed in this research. Furthermore, some aspects from the interpretivist approach that were felt to benefit the research are also employed. The reasons behind this selection can be summarized by the following points:

- The dominant approach that is mostly employed in the IS research is the positivist approach, as more than 75% of research conducted in this field followed this approach (Mingers, 2003).

- The aim of this research requires using a comprehensive conceptual framework. Therefore, this research defined and proposed a comprehensive theoretical model that aims to explore and investigate factors that affect the adoption and utilisation of e-Government (see Chapter 3). The relationships between the model's constructs were clearly defined. Objective reality based on a systematic framework that measures the relationships between independent and dependent variables is one of the main characteristics of positivism. This justifies, from the epistemological perspective, the reason for selecting positivism as the main approach.
- This research aims to explore and investigate the impact of the users' perceptions, beliefs and experiences on their intention to adopt and use e-Government systems and services; and ideally the researcher remains independent and detached from the study. This justifies, from the ontological perspective, the reason for selecting positivism as the main approach.
- This research proposes a number of hypothesized relationships that are presented in Chapter 3. These hypotheses were developed to be tested using the collection of quantitative data as the main method, as well as acquiring qualitative data, as an auxiliary method. A deductive approach is used to explore, investigate and understand the influential factors that affect the adoption and utilisation of e-Government comprehensively. This justifies, from the methodological perspective, the reason for selecting positivism as the main approach with the employment of some elements of the interpretivist approach.
- This research aims to generalize the findings from the sample of the population and this is another characteristic of the positivist approach.

These are the reasons behind choosing the positivist approach as the main paradigm for this research, in addition to employing some characteristics from the interpretivist approach that benefit the aims and objectives of this research. Combining the two approaches was the most appropriate design for this research since it gives the researcher the opportunity to develop a comprehensive and systematic framework and collect as much data as possible from the participants to test and validate the proposed model as well as exploring and understanding the factors that influence their adoption and utilisation of e-Government systems and services. Several studies in the IS field have combined those two research philosophies. For example, Low & Jeffery (1989) attempted to understand software process changes using the two approaches. Furthermore, Al-Zaabi (2013) also followed the two approaches in a study that aimed to understand and analyse factors that influence the adoption, diffusion and use of e-Government services in the Abu Dhabi Police Force. The following section discusses briefly deductive and inductive approaches.

4.2.2 The research approach (Deductive and Inductive approaches)

Collis & Hussey (2009) described the deductive approach as a study where a conceptual and theoretical structure is developed and is then tested empirically. It can also be described as a 'top-down' approach, where the research goes from general to more specific terms. On the other hand, the inductive approach can be described as a 'bottom-up' approach where the research goes from a specific observation to a broader generalisation. In other words, the inductive approach is to gather general inferences from specific cases (Burney, 2008). This research follows the deductive approach, commencing with the development of a conceptual model and hypotheses followed by empirical measurements, tests and analysis, resulting in a revision of the original theory based on the final findings.

4.2.3 The research strategy

There are several strategies that can be employed when conducting a study. Saunders et al. (2009) divided the research strategies into seven strategies, namely, experiment, survey, case study, action research, grounded theory, ethnography and archival research. According to Yin (2003), each strategy can be used for exploratory, descriptive and explanatory research. Saunders et al. (2009) state that the choice of a particular strategy should be based on the research questions and objectives, and no one research strategy is better than another. They add that a research can employ one or more strategies. This means that one strategy can be used as a part of another strategy; for example, it is possible to use a survey strategy as part of case study strategy (Saunders et al., 2009: 141). The strategies that are employed in this research, which are case study and survey, will be discussed in the following sections, alongside the reasons for choosing them.

4.2.3.1 Case study strategy

The case study strategy can be defined as "a strategy for doing research which involves an empirical investigation of a particular contemporary phenomenon within its real life context using multiple sources of evidence" (Robson, 2002:178). Moreover, Collis & Hussey (2009) defined it as "a strategy used to explore a single phenomenon in a natural setting using a variety of methods to obtain in-depth knowledge". The case study strategy has the ability to provide answers to the 'what' and 'how' questions. This research is concerned with what the key factors are that influence the adoption and utilisation of e-Government systems and services and how these factors would contribute to the success of e-Government in Saudi Arabia. Furthermore, the objectives of this research involve exploring and understanding the impact of the proposed factors from an empirical investigation within the Saudi context by collecting data from real and potential users of e-Government services and systems. Thus, the case study strategy is the most appropriate strategy for this research.

A case study strategy can be single or multiple. The single case study is concerned with answering the research question and providing results from one perspective, whereas multiple case studies can strengthen the end results by answering the research question and providing findings from more than one perspective. Yin (2009:61) argued that research that produces results from multiple case studies is preferable to research producing results from a single case study as: "analytic conclusions from two or more case studies are more powerful than those coming from a single case". One of the aims of this research is to provide more comprehensive findings from different perspectives. Exploring and investigating the influential factors from citizens, users from business sector and government employees can be viewed as three case studies. The reason for using multiple case studies in this research is that the researcher wants to validate, investigate and analyse the influence of the proposed factors on the adoption and use of e-Government services and systems from different perspectives that represent all potential users of such systems. This would significantly contribute to bringing e-Government systems in Saudi Arabia to a more successful level. Furthermore, using multiple case studies provides the ability to compare results between the case studies, and this will provide a better understanding and explanation (Walsham, 1995 and Dark et al., 1998:277). Thus, using multiple case studies can strengthen the research findings and this is what underlies the choice to use this strategy.

4.2.3.2 Survey strategy

The survey is another strategy that is used in many studies in the literature, particularly for information systems research (Orlikowski & Baroudi, 1991). It is usually associated with the deductive approach and is very popular as it helps to collect a large amount of data economically. Questionnaires are often used in this strategy to collect quantitative data which then can be investigated and analysed using descriptive and statistical analysis. Additionally, the findings from the analysis of the quantitative data can be used to investigate and explore the relationships between variables. This strategy offers more control over the research process and can generate findings that are representative of the targeted population (Saunders et al., 2009). As stated earlier in Chapter 1, the objectives of this research involve exploring and analysing the factors that influence the adoption and utilisation by different types of users and this involves collecting data from a large number of participants. The survey strategy is the most appropriate strategy to be used for this aim, since it allows the researcher to collect data from the targeted participants effectively. Moreover, the context of this research is the e-Government systems and services in Saudi Arabia; and the survey strategy helped the researcher to collect as much data as possible during the fieldwork period, since the researcher had to travel back to Saudi Arabia for the data collection. Furthermore, a number of hypotheses based on the proposed conceptual model have been developed in this research (see Chapter 3). These hypotheses need to be tested empirically and the survey strategy is the most appropriate strategy

for this purpose. Moreover, the survey strategy is associated with the positivist philosophy approach that is mainly followed in this research (Saunders et al., 2009). For the previously discussed reasons, the survey strategy was used as part of this research methodology.

The case study strategy and survey strategy are among the most common strategies used in information systems research (Orlikowski & Baroudi, 1991). Choudrie & Dwivedi (2005) also reviewed and examined a range of methods used to study technology adoption and use within the information systems field. They reviewed a number of studies and articles published in well-known journals including the MIS Quarterly, Information Systems Research, European Journal of Information Systems, Information Systems Journal and other journals related to the IS field. Their findings suggested that the survey strategy and case study were the most common strategies used when investigating the adoption and use of technology. This is another reason that motivates the use of the case study and the survey strategy as a way of collecting data from different types of users. The data can be collected through different methods within the case study and survey strategies including a questionnaire, an interview and structured observation (Saunders et al., 2009). The following section summarises the quantitative and qualitative approaches in research methods and also identifies the methods used in this research.

4.2.4 The Research Method: Quantitative and Qualitative Approaches

The choice of research method - be it a quantitative, qualitative or multiple method, determines the way of collecting data and is based on the research aims, objectives, context and circumstances. This section discusses each method and differentiates between them. It will also identify the research method used in this research.

4.2.4.1 The Quantitative Method

The quantitative method aims to collect numerical data for examining and investigating the relationships between measurable variables (Bryman, 2008). According to David & Sutton (2004), the quantitative method is associated with testing hypotheses using a deductive approach in order to support or modify existing theory. It is also associated with the positivist approach that involves statistical analysis, scientific procedures and numerical data presentation (Creswell, 2008b). Creswell (2003a) argued that if the research problem is to identify factors that influence an outcome or are the best predictors of outcomes, then the quantitative method is the best approach. He also added that this method is the best for research that aims to test a theory or explanation (Creswell, 2003a). Since the objectives of this research involve exploring and investigating the salient factors affecting users' adoption and use of e-Government, as well as validating the proposed framework by investigating and testing hypothesized relationships between the proposed factors, the quantitative method is used in this research as the main

method of collecting data. The need to collect data from large number of participants is also another reason for choosing this method as it enables the obtaining of valuable and robust data from different potential users using structured questionnaires, which are one of the techniques associated with this method. As stated earlier that the quantitative method is also associated with the positivist approach that is chosen for this research.

4.2.4.2 The Qualitative method

The qualitative method seeks to explore and understand meanings rather than produce numbers (Creswell, 2008b). According to Bryman (2008:22), the qualitative method is "a research strategy that usually emphasises words rather than quantification in the collection and analysis of data". It aims to provide a complete description by understanding and interpreting social interactions; and helps to understand the phenomenon in-depth (Johnson & Christensen, 2010). This method usually follows the inductive approach and its focus is on generating theory throughout the research. In this research, the qualitative method is employed as an auxiliary method to the main, quantitative method. A form of short semi-structured interview was conducted with several of the surveyed participants. The reason for employing this method is to strengthen the results of this research by providing further evidence for the findings. Moreover, it helps to better understand the influence of the proposed factors, since it gives the researcher the opportunity to collect data about the participants' views and perceptions in more detail. In other words, the qualitative method is used as complementary method to expand the understanding of the impact of the proposed factors on the users' adoption and use of e-Government systems and services.

There are many differences have been reported in the literature between the two methods. Table (4.2) below briefly presents the attributes, strengths and weaknesses of each method:

Table 4.2: Quantitative Method and Qualitative Method (Neuman, 2011; Bernard, 2000)

Quantitative method	**Qualitative method**
• The research tests hypotheses that are developed at the beginning • Concepts are in form of variables • Measures are created before the data collection • Data are in the form of numbers • Procedures are standard and replication is frequent • The analysis process uses statistics, tables or charts discussing how and what they show in relation to the hypotheses • It often uses a deductive approach • Formal language is usually used	• The research captures and discover meanings • Concepts are in form of themes and classifications • Measures are created on an ad hoc basis • Data are in the form of words, observations and transcripts • Procedures are particular and replication is rare • The analysis process proceeds by extracting themes or generalisations from evidence and organizing data to present a coherent and consistent picture • It often uses an inductive approach • Informal language is usually used

4.2.4.3 Multiple methods

Multiple methods refer to the combination of multiple data collection techniques and procedures. Saunders et al. (2009) categorized this research approach into two main categories, namely, multi-method and mixed-method. Multi-method refers to the combination of different data collection techniques but within the same approach either quantitative or qualitative. For example, using questionnaires and structured observations for data collection and analysing the data using statistical procedures is a multi-method quantitative study. Moreover, using in-depth interviews and diary accounts for data collection and analysing the data using non-numerical procedures is another example of multi-method which is a multi-method qualitative study (Saunders et al., 2009).

The other category (Mixed method) refers to the combination between quantitative and qualitative approaches in terms of data collection and analysis procedures in the same study (Saunders et al., 2009). Tashakkori & Creswell (2007:4) defined the mixed method as "Research in which the investigator collects and analyses data, integrates the findings, and draws influences using both qualitative and quantitative approaches or methods in a single study or program of inquiry". In the mixed method approach, the quantitative and qualitative data collection techniques and analysis procedures can be combined at the same time (parallel) or one after the other (sequential) (Creswell & Clark, 2011 and Saunders et al., 2009). However, the quantitative data is analysed quantitatively and the qualitative data is analysed qualitatively. Although the mixed method uses both approaches in the same research, it is often the case that either quantitative or qualitative techniques or procedures are dominant (Saunders et al., 2009). Johnson et al. (2007) defined three types of mixed methods which are presented in Figure 4.2 below.

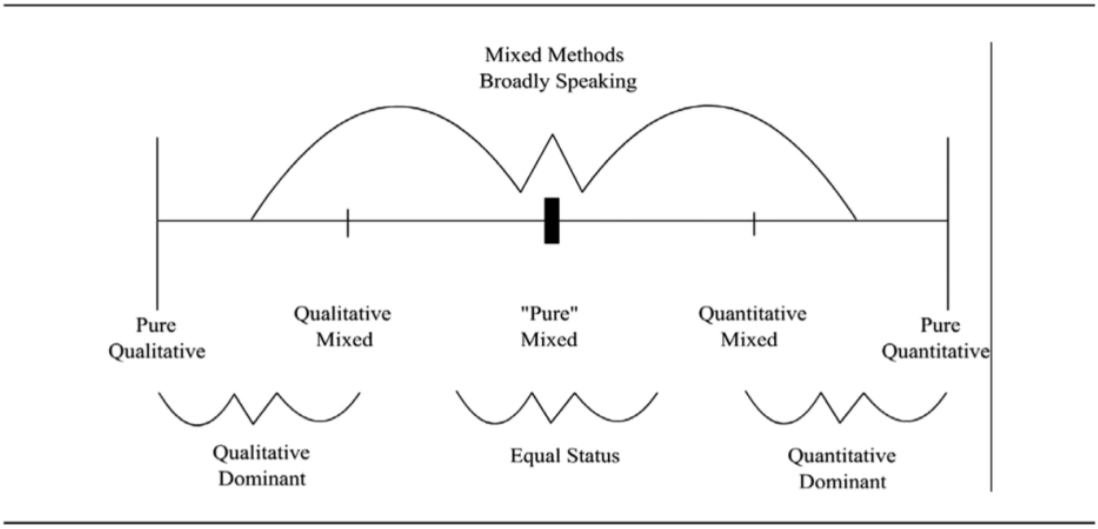


Figure 4.2: Types of mixed method (Johnson et al, 2007).

The diagram shows the three main research approaches which are: pure qualitative, pure quantitative and pure mixed. The areas between any two pure approaches represent the different combinations between them. Those in between approaches are qualitative dominant mixed method and quantitative dominant mixed method. The first approach is the type of mixed method where the research relies on the qualitative approach with the addition of quantitative data to benefit and enrich the research.; whereas the second approach is the type of mixed method where the research relies on the quantitative approach with the addition of qualitative data to benefit and enrich the research (Johnson et al., 2007).

The research method for this study falls into the category of quantitative dominant, whereby the quantitative method is used as the main method (dominant method) and the qualitative method is used as a supportive and complementary method to benefit and enrich the findings. The quantitative dominant mixed method used in this research is also considered to be parallel where both quantitative and qualitative data are collected at the same time when conducting the fieldwork. This can be defined as mixing during data collection, where the quantitative and qualitative approaches are combined during the data collection phase (Creswell & Clark, 2011). Moreover, the mixing in this research also occurs in the data analysis process. This can be defined as mixing during data analysis where the quantitative and qualitative approaches are combined during the analysis phase using an interactive strategy of merging (Creswell & Clark, 2011). There were several reasons for using these forms of mixing in parallel. Firstly, the aim of this research is to investigate and analyse the adoption and utilisation of e-Government systems and services in Saudi Arabia, which is a considerable distance from where the researcher is based. Thus, the researcher travelled back to Saudi Arabia, his home country, to collect data. Collecting the quantitative and qualitative data in parallel at the same time makes the most of the data collection period. Secondly, one of the research objectives is to achieve more comprehensive and representative findings by collecting data from different places in Saudi Arabia. Therefore, collecting both quantitative and qualitative data at the same time would maximise the benefits of the time spent in each place. Thirdly, three different types of users are involved in the data collection phase. Thus, collecting quantitative data from all the participants and qualitative data from some of them at the same time gives the researcher the opportunity to collect more descriptive data (the qualitative data) that is consistent with the answers from the questionnaires (the quantitative data) in order to have better understanding of the impact of the proposed factors. Finally, mixing results during the data analysis strengthens the results and provides more evidence about the influence of the proposed factors on the users' adoption and utilisation of e-Government systems and services.

Using multiple methods within the same research forms a triangulation approach which benefits the research in terms of validity and reliability (Denzin, 1978). Triangulation means using more

than one research method in a study. This involves the use of different types of sample as well as different data collection methods. The purpose is not only to cross-validate the data, but also to capture different perspectives and different dimensions of the same phenomenon. Denzin & Lincoln (1994) described the triangulation approach as follows: "The use of multiple methods, or triangulation, reflects an attempt to secure an in-depth understanding of the phenomenon in question". Leedy (1997) also defined triangulation as "the process of using multiple data collection methods, data sources, analysts, or theories to check the validity of the findings".

Denzin (1978) and Patton (1999) identified four types of triangulation, namely, methods triangulations, triangulation of sources, analyst triangulation and theory/perspective triangulation. Methods triangulation refers to the use of different data collection methods to facilitate deeper understanding. Triangulation of sources refers to examining the consistency of different data sources such as comparing people with different points of views. Analyst triangulation refers to the use of multiple analysts to review the findings in order to understand multiple ways of seeing the data. Theory/perspective triangulation refers to the use of multiple theoretical perspectives to interpret the data.

This research uses multiple data collection methods, namely surveys and semi-structured interviews, and thus uses the methods triangulation approach. Moreover, this research collected data from three different data sources, namely, citizens, users from the business sector and government employees and this is a triangulation of sources. The goal of utilising the triangulation approach is to end up with rich, robust and comprehensive results that can facilitate a better understanding of the adoption and utilisation of e-Government services and systems from different perspectives. This is what makes this research unique as, to the best of the researcher' knowledge, there are no studies to date that use a multiple method approach to explore and investigate salient factors that influence the adoption and utilisation of e-Government systems and services from three different perspectives, namely, citizens, users from the business sector and government employees.

4.3 Data collection

This section discusses the data collection phase of this research; and also involves the processes of developing the research instruments that have been used in the data collection. It also discusses the instruments' pre-test (pilot study) phase that checks instrument validity, the sampling technique and the large-scale data collection phase.

4.3.1 Research instruments

Three versions of the research instruments were developed to collect data for this research. Each instrument was dedicated to the targeted sample of participants i.e. citizens, users from the

business sector and government employees. The research instruments were the questionnaires and the guidelines for the short semi-structured interviews. The questionnaire for the public participants (citizens) contains 108 items, the questionnaire for the participants from the business sector contains 99 items and the questionnaire for the governmental employees contains 66 items (see appendices D, E and F). Although the questionnaires were relatively long, they collected fundamental data designed to lead to an efficient and sufficient analysis. Each factor for each targeted sample was measured with different number of items. Raubenheimer (2004), states that the number of items per factor is crucial, specifically for scales with one factor which require at least four items to be identified. Scales that measure more than one factor, like the scales used in this study, can be identified with as little as two items for each factor. The number of items that were developed to measure each factor for each sample will be presented later in this chapter (Section 4.3.4).

The items involved in each version were dedicated to the targeted participants; and were developed with the perspective of each type of participant in mind. The questionnaire versions comprise different forms of questions including a 5-point Likert scale (that ranges from Strongly Agree to Strongly Disagree), a 5-point importance degree scale (that ranges from Very high importance to Very low importance) and a 5-point influential degree scale (that ranges from Very influential to Very uninfluential). There are also 3-point scales for some items.

This variation in the design of the research instruments was for several reasons. Firstly, to obtain more accurate answers based on the goal and theme of the question. Secondly, to encourage participants to pay more attention when answering, since the same measure range will allow lazy participants to answer questions similarly; and may also make the questionnaire boring especially if it is relatively long questionnaire (Psychwiki, n.d.). This variation can thus reduce the amount of measurement errors, or so-called ‘noise’. Although it has been stated in the literature that all variables in multivariate measurement must be assumed to have measurement errors to some extent (Joseph et al., 2010), these measurement scales are used in an attempt to reduce these errors by developing different measurement scales which are based on the theme of the questions.

The measuring items that were developed in this research are another aspect that makes this research distinct from other research in the literature. Many studies in the technology acceptance and e-Government adoption literature adopted their items from prior studies, which may not be completely applicable to the intended context and thus, the outcomes would not provide complete and actual findings that should be derived from the intended context. Most of the measuring items in the current study were designed and developed in consideration of the Saudi context. For example, when measuring the influence of the *Functional Quality of*

Service/System factor, several aspects related to the functional quality within the Saudi context - such as the SADAD payment systems and the Saudi postal services. Furthermore, when measuring the influence of *Socio-Cultural* factors, the use of interpersonal networks, or *wasta,* to support or accelerate the processing of government transactions was considered as a socio-cultural aspect that can impact on the adoption and use of e-Government.

Additionally, several aspects related to the measured factor were considered when developing the measuring items. For example, the impact of previous experience of using e-Government systems as well as the previous experience of using non-governmental online services such as e-Business and e-Banking services is involved in measuring the influence of the *Previous Experience* factor. Moreover, measuring the influence of *Technical Quality of Services/System* involves several technical aspects, such as the impact of the interface design of the provided e-Services and the impact of technical errors on the adoption and use of e-Government.

Since the context of this research is the e-Government systems and services in the Kingdom of Saudi Arabia and the targeted participants all had Arabic as their native language, all the questionnaires versions were translated into Arabic. Moreover, all the short semi-structured interviews were also conducted in Arabic. The English and Arabic versions of all the questionnaires and the semi-structured interviews guidelines can be seen in Appendices D, E and F.

4.3.2 Instrument test (Pilot study)

After developing and translating the research instruments, a pilot study was conducted with 21 participants (10 Saudi citizens, 6 government employees and 5 participants from the business sector in Saudi Arabia). Isaac & Michael (1995: p.101) and Hill (1998) suggest the sample size for a pilot study to be between 10 and 30. Therefore, the sample size for the pilot study of this research is sufficient. The pilot study in this research had four aims: to improve the research instruments when developing their items, to validate the research instruments, to estimate the time needed for completing the questionnaire and interview and also to test the comprehension and clarity of the research instruments with participants (Saunders et al., 2009).

A number of comments and suggestions were received from the participants in the pilot study including grouping the questions into several sections, clarifying some questions, rewording or removing a few questions which did not seem directly relevant. Most of the comments and suggestions were considered and addressed accordingly when revising the questionnaires.

4.3.3 Research instrument validity

Bhattacharyya (2010) defined validity as "the degree to which a test measures what it intends to measure"; it also refers to the clarity of the research instrument. The validity of an instrument is a matter of degree; the greater the evidence that an instrument produces valid results, the greater the likelihood that it will generate the information required (Colton & Covert, 2007). Validity cannot be calculated or measured directly, it is judged by the existing evidence (Worthen et al, 1993). There are several methods to determine or assess the validity of a research instrument; but all of them lead to answering the same question which is "are we measuring what we intend to measure?" The most dominant methods to determine and assess the instrument validity are Face Validity, Content Validity, Criterion Validity and Construct Validity. This research utilised Face Validity and Content Validity methods to assess the instruments' validity.

Corton & Covert (2007) define face validity as the degree to which the research instrument appears to be an appropriate measure to collect the desired information that meets the research purpose, particularly from the perspective of the potential respondents. Bornstein (2004) defines it as the degree to which a test clearly measures what it intends to measure. It refers to the clarity of a test and the degree to which its purpose is apparent and clear to the participants (Bornstein, 2004). The face validity method provides useful information about the measuring instrument and determines to what extent the instrument meets the intended purpose (Corton & Covert, 2007). Tests that with purposes that are clear, even for participants who only have elementary knowledge, are judged to have high face validity; on the other hand, tests where the purpose is unclear would be judged to have low face validity (Nevo, 1985).

All the instruments developed in this research to collect data were assessed during the pilot study to determine and assess their degree of face validity. The questions in all three versions of the instrument were revised several times to make sure that they would collect valid information and provide the measurements intended. During the pilot test of each version of the questionnaire, the research objectives and the goal of measuring the influence of the proposed factors were explained to the participants, to give them a clear picture of the aims of the study. The participants were asked to assess the clarity of the questionnaires' items; and to face validate each item in accordance with the general research purposes and the purpose of each factor in the research model (EGAUM). In other words, the developed items were assessed and face validated in terms of their relation to the assigned factors. A number of modifications were made to the instruments based on the feedback and comments from the participants.

A measurement or a study instrument has large content validity if it covers all the aspects of the concept that intended to be measured. Therefore, the researcher attempted to identify as many items as possible in order cover the focus of each proposed factor. The research instruments

have been revised many times to provide three measurement versions that can collect the desired data. In most cases, content validity is evaluated in discussion with colleagues or other experts (Blunch, 2013). Thus, the instruments of the current research have been reviewed by 5 academic members who are experts in interactive systems and the field of Information Systems to have high content validity; and the feedback thus acquired also helped to improve the research instruments. The aforementioned procedures, including the reviewing, testing, revising and modifying of the research instrument contributed to achieving high instrument validity.

4.3.4 Research instrument reliability

Blunch (2013) stated that a research instrument is evaluated by its reliability. The reliability of a measuring instrument means its ability to provide identical results if it is repeated under identical conditions. Gay (1987) defined reliability as "the degree to which a test consistently measures whatever it measures". There are many different methods to determine the reliability of an instrument including the Test-retest method, Split-Half method and Internal Consistency method.

- *The test-retest method* repeats the measurement or the test using the same instrument with the same respondents at different times and then estimates the reliability from the correlation coefficient between the two. The issue with this method is the difficulty of determining whether it is measuring the reliability or possible changes in the latent variables over time. Moreover, the reliability degree could be affected if respondents remember their answers from the first time (Blunch, 2013). Another issue with this method is the difficulty of repeating the test at different times with the same participants, especially if the study is conducted in a different country, as in this research.
- *The split-half method* splits the test into two and then compares the results between them. The correlation between the reliability of each half indicates the reliability of the entire instrument. A test can be split into two halves in several ways e.g. first half and second half strategy or odd-even strategy. This method is appropriate for long questionnaires that measure or test one construct and it is not suitable for instruments that measure several constructs, as in the current study (McLeod, 2013). Therefore, this method cannot be utilised in this research instrument since it has several constructs to be measured and they cannot be split into two halves.
- *The internal consistency method* determines how the items in a test relate to the other items. It is basically used to assess survey items with a single construct to discover the degree of consistency of the items that measure that construct. If the test aims to measure several constructs, items that measure each construct can be assessed with the internal consistency

method. Cronbach's Alpha is the most common coefficient that can be calculated to evaluate the internal consistency of a test. It is applied to responses that have more than two options (Eucharia & Nnadi, 1999). Therefore, it is applicable to this research instrument. Cronbach's Alpha reliability coefficient can range between 0 and 1 with the value closest to 1 considered to be a high level of reliability. What is an acceptable level of reliability depends on the research purpose. The reliability of an instrument developed for research purposes is acceptable at 0.6; whereas in diagnostic research where the instrument is developed to make decisions about individuals, such as in psychological tests, it needs to be much higher (Suhr, 2003). Cronbach's Alpha has been calculated for all the factors and the values are shown in Table 4.3 below. This excludes the Previous Experience (PE) factor since this was measured with Likert-Type items to measure the influence of two different experiences –i.e. previous experience of using e-Government systems and services as well as the previous experience of using non-governmental online services.

Table 4.3: Cronbach's Alpha for all factors

Scale factors	**Citizen sample**		**Business sector sample**		**Government employee sample**	
	# of items	Cronbach's α	# of items	Cronbach's α	# of items	Cronbach's α
Perceived Benefits (PB)	7	.900	7	.825	5	.791
Socio-Cultural (SC)	7	.630	5	.686	9	.664
Awareness (AW)	10	.781	9	.822	3	.602
Functional Quality of Services (FQS)	7	.633	10	.800	6	.662
Perceived Simplicity (PS)	6	.641	6	.638	4	.646
Technical Quality of Service (TQS)	6	.629	5	.624	3	.648
Accessibility (ACC)	5	.606	4	.619	2	.621
Perceived Trust (PT)	7	.658	9	.792	4	.632
Regulations and Policies (RP)	3	.912	4	.899	3	.647
Intention to use e-Government (ITU)	2	.621	2	.659	4	.691
Perceived e-Readiness of e-Government (PER)	2	.668	2	.603	3	.682

4.3.5 Sampling

When conducting a study, several sampling techniques can be chosen for data collection depending on the research circumstances including the research objectives, the research context, the study location, the time and financial scope (Blumberg et al., 2008). These sampling

techniques can be divided into two categories, namely, probability and non-probability (Bryman & Bell, 2011b). Each category has several sampling techniques for data collection; for example, probability sampling techniques include simple random sampling, systematic sampling, stratified sampling and cluster sampling; whereas the non-probability sampling techniques include convenience sampling, judgmental sampling and snowball sampling (Groves et al., 2009). The core concept in the probability sampling is the random selection where each person in the population has the same chance of being selected (Groves et al, 2009). Therefore, a complete numbered list of the whole population is required in all the probability sampling. The context of this research is Saudi Arabia, and the aim is to investigate and analyse the adoption and utilisation of the potential users of e-Government systems and services. Thus, having a list of the whole population is difficult for such analysis. In other words, the data cannot be collected from the entire population. Therefore, the non-probability sampling techniques are the most appropriate method for this research (Saunders et al., 2009).

Non-probability sampling techniques are all based on non-random selection. This means that not all the elements of a population need to have an equal chance of being selected (Blumberg et al., 2008; Groves et al., 2009). In the judgemental sampling technique, the researchers rely on their own knowledge and professional judgment when selecting subjects who meet the research criteria and objectives. This sampling technique targets subjects who are particularly knowledgeable about specific issues that are being investigated and such subjects usually are from limited groups (Babbie, 2014). For example, when studying what are the causes of a certain disease then the appropriate subjects who can provide the desired information are doctors or individuals who have the disease. In the snowball sampling technique, the researchers firstly collect data from certain subjects who meet the research criteria; then they collect more data from more subjects who are identified by the initial subjects. This technique is appropriate when the targeted subjects are limited and difficult to reach (Babbie, 2014; Saunders et al., 2009). The convenience sampling technique (some call it opportunity sampling) allows the researchers to collect data from subjects who are both willing and easy accessed.

The convenience sampling technique was utilised in this research since it is the most appropriate technique based on the research objectives, where recruiting as many potential users as possible would be beneficial. Moreover, it is the most feasible technique when considering the resources available and the research circumstances including the research context, the research location and the time available. This is because opportunity sampling is the least time-consuming and the least expensive, compared to the other techniques. It also helps to have a large sample as well as increasing the generalizability of the findings. The convenience sampling technique is used widely in research, and it is the most common technique in behavioural and social research (Stangor, 2010; Saunders et al., 2009). In addition to the stated

advantages of this technique, it also ensures having sufficient participants for the study (Blumberg et al., 2008). Additionally, in an attempt not to limit data collection from one geographical area, this research collected data from different places and cities in Saudi Arabia including Riyadh (the capital city), Jeddah and Alkhobar, which are major cities in Saudi Arabia. It was decided to collect data from different geographical places to increase the reliability of the findings, increase the representativeness of the sample, support the generalizability of the findings and also to decrease the bias that might occur with the opportunity sampling technique.

In terms of the sample size of this research, Bryman & Bell (2011b) stated that using a large sample size would not guarantee a higher accuracy in the findings and therefore, would be waste of time, effort and money. On the other hand, using a very small sample size would lead to lower accuracy (Hair et al, 2010). Thus, the sample size of this research was determined by rule of thumb. Roscoe (1975) argues that the following rule of thumb should be considered when determining the sample size:

- The sample size that is > 30 and < 500 is appropriate for most research.
- When dividing the sample into different categories or different sub-groups such as postgraduate and undergraduate, the minimum sample size for each category is required to be 30.

Saunders et al. (2009) identified that statistical analysis usually requires a minimum sample size of 30. He added that the sample size that needs to be collected is influenced by several factors including the availability of resources, particularly the financial support and time available. Comrey & Lee (1992) stated that the sample size varies between 50 (poor) and 100 (excellent). Furthermore, Schreiber et al. (2006) also suggest that 10 participants for each estimated variable in the research model is generally the agreed-on value. Based on the previous suggestions and rules of thumb, considering the research objectives and scope as well as the research instruments' length, a sample size of 300 was deemed sufficient and identified as the number to be targeted. Well-known websites that are usually used in determining sample size such as Raosoft.com were also used to determine the sufficient sample size for this research (Raosoft, n.d.).

4.3.6 A Large Scale Study

As stated earlier, three different versions of the questionnaires and short semi-structured interview guides were developed for the three targeted samples. Based on the research method that was discussed in Section 4.2.4.3, this research employs a cross-sectional approach where

data is collected at one point in time to determine the relationships between the proposed factors and the adoption and use at the time of the study. Permission for the data collection was obtained from the authority responsible for the e-Government program (Yesser) in Saudi Arabia. The data for this research was collected over the period between August and October 2014. With regard to the survey mode for data collection, this research utilised the personally administrated mode where data is collected in person. This was for several reasons:

- The ability to motivate and encourage the respondents to participate (Sekaran, 2003). This is limited in other modes such as mail and electronic modes.
- Data can be collected from large number of participants simultaneously in a quick, easy and efficient way (Sekaran & Bougie, 2011).
- Ensuring collecting data from the targeted samples that involve citizens, users from the business sector and government employees within the Saudi society. This is one aspect that contributes to the distinct and significance of this research; and can be difficult to achieve in other collection modes.
- Clarifying the items to the participants when needed, which cannot be done in the mail and electronic modes (Sekaran, 2003). This possibility for clarification reflects positively on the validity and reliability of the results.
- Ensuring a higher response rate, as participants were informed that questionnaires would be collected immediately after completion.
- Including both Internet users and non-users, that is not possible in electronic modes that exclude non-users (Sakeran, 2003).
- Does not require a follow-up procedure which is time-consuming, as is the case in other modes such as the mail mode (Sakeran, 2003).
- Interviewing participants (conducting the short semi-structured interview) who were willing to participate in the interviews after completion of the questionnaire as part of the research and data collection design.

The use of a triangulation approach and in-person mode increases the validity and reliability (Saunders et al., 2009). The total number of the questionnaires that were distributed and collected was 836 questionnaires, which provided the quantitative data. After a filtering and screening process to detect incomplete questionnaires, random answers questionnaires and participants who should not have been included, 61 responses were excluded and a total of 775 responses were deemed valid for the analysis. More details about the excluded and valid responses will be discussed in Chapters 5, 6 and 7. Furthermore, a total of 31 short semi-structured interviews were conducted with the participants and yielded qualitative data. According to a sample size guidelines recommended by Onwuegbuzie & Collins (2007); for

qualitative research, between 3 and 5 interviewees is the minimum sample size for qualitative studies that employ a case study approach. Since the qualitative data (semi-structured interviews) was supportive and complementary data, the numbers of the conducted interviews were sufficient for their purposes in this research. All participation was optional after completing the questionnaires.

During the data collection phase, the questionnaires were firstly distributed to the participants for completion. When completing the questionnaire, the participants were given an option to participate in the short semi-structure interview either after completing the questionnaires immediately or at a different time that suited them. Contact information was obtained from participants who opted for the latter choice.

In terms of the data collection protocol for the citizens' sample, the questionnaires were distributed in public areas including waiting areas of government agencies where the participants were waiting for their transactions to be completed; as well as other public areas such as shopping centres, coffee shops and parks. In Saudi Arabia, a number of government agencies have offices in different shopping centres that provide government services. Customers are usually waiting for their turn or waiting for their transactions to be completed in the coffee shops around the office or in waiting areas in the shopping centres. Targeting participants in the aforementioned areas gave an opportunity to include the largest possible number of participants who needed to perform government transactions and use government services. Some participants took the questionnaire back home to complete it and then returned it next day when they were required to visit the government office again to provide or receive documents. The participants were given the option to participate in a short interview straightaway after completing the questionnaire or at different suitable time.

With regard to the participants from the business sector, the questionnaires were distributed to them at their offices after prior contact and arrangement. Two types of participants were included in this sample, namely, business owners and employees who work in business firms and deal with government agencies with regard to their companies' transactions. Usually one or two employees are responsible for accessing government services and completing transactions on behalf of a company (even large companies). Most businesses involved in this sample were large companies; but several medium and small business entities were also been included. The business activities of the participating companies were different in order to provide more comprehensive results. The same data collection protocol was utilised, whereby the questionnaire was distributed first and then the optional interviews were conducted after completion of the questionnaire or at different suitable time. Participants from business sector

are usually busy; therefore, meeting them in person at appropriate time to collect data is a useful method.

For the government employees, the questionnaires were also distributed to them at their offices after prior contact and arrangement. Four government departments were involved in the data collection for this sample. The basis for selecting the four departments was their level of involvement and influence in the Saudi e-Government program. The sampling strategy was that all the departments involved should be active in terms of providing e-Services and e-Transactions to both citizens and the business sector. The targeted participants were thus government employees at operational level who were involved in delivering government services and processing governmental transactions provided to customers. The same data collection protocol was utilised; whereby optional interviews were conducted after the participants had completed the questionnaire or at a different time convenient to them. Government employees are usually busy; therefore, it was felt that meeting them in person at an suitable time to collect data was an appropriate method. Sometimes the questionnaires were distributed and then collected at a different time for the convenience of the participating employees.

All participants were given an information sheet that explains the study aims and objectives. It also includes a brief description of e-Government with some examples of e-Services and e-Transactions that could be provided by e-Government for more clarification. Furthermore, the participants were informed that their participation was voluntary and it was completely up to them to take part or not; they were also informed that if they decided to participate, they were still free to withdraw at any time and without giving a reason. Additionally, they were informed that all information provided would be anonymised and their privacy and confidentiality maintained; and that all information provided would only be used for research purposes (see Appendices D, E and F).

4.4 Data analysis

Based on the research aims and objectives, two analysis approaches were used to investigate and analyse the collected quantitative data, namely, descriptive analysis and statistical analysis. Before proceeding to the data analysis stage of the quantitative data, several procedures were performed including cleaning and screening the data (Churchill & Lacobucci, 2004). Then, numeric values were assigned and coded using the SPSS statistical analysis software package (version 22) which was used mainly for analysis of the quantitative data. This section will explain all the preformed procedures for the data cleaning and screening. It will also explain the procedures for detecting outliers and how they were handled; as well as the analysis approaches and procedures that were performed to achieve the research objectives and answer the research

questions. With regards to the qualitative data (semi-structured interviews), the collected data was used to support, complement and add more explanation and give more insight to the findings. This contributes to a better understanding of the influence of the proposed factors on the adoption and utilisation of e-Government services and systems.

4.4.1 Data cleaning and screening

Data screening process in this research involves several examinations in order to ensure that the data is prepared and ready for analysis. This includes identifying cases or participants that are not considered to be part of the targeted sample; also examining data which is missing or incorrectly entered as well as evaluating and managing outliers.

- *Exclusion of untargeted cases*

This research aims to study the influential factors in adopting and utilising e-Government in the context of Saudi Arabia. Therefore, Saudi nationals are those targeted for the sample, since the study involves factors to be studied from the Saudi context, such as the socio-cultural, perceived trust and previous experience factors. The exclusion of non-Saudi nationals is in line with the research goals of conducting a cross-sectional study of Saudi society. Moreover, the research instrument is designed to collect data that relates to the Saudi context, such as opinions about the available payment methods in Saudi Arabia, the Saudi post mail services and the influence of *wasta* on the adoption of e-Government. Incomplete questionnaires were also excluded, since all the questionnaire items need to be answered as they represent the research model constructs. Furthermore, questionnaires with obviously random responses were also excluded. Table 4.4 below shows the number of cases that were excluded with the reason for exclusion:

Table 4.4: Exclusion of invalid cases

Sample	Number of excluded cases		
	Non-Saudi nationality	Incomplete	Random responses
Citizen sample	8	31	6
Business sector sample	1	4	-
Government employee sample	-	7	4

As stated in the sampling section (Section 4.3.5), the total number of questionnaires collected for this research was 836 and the valid responses were 775, after excluding the untargeted, random and incomplete responses. The valid responses comprise 416 citizens, 311 government employees and 48 participants from the business sector.

- *Missing and incorrect data*

As a part of data preparation for analysis, Pallant (2013) identifies two steps for data screening and cleaning. The first step is checking the data for possible errors and detecting out of range values for each variable. The second step is treating the detected errors by deleting them or correcting them if they were entered incorrectly. All the responses have been examined for out of range values, incorrect values and missing values. The data was entered carefully and it was ensured that none of these three types of error were present. However, there were number of missing values, but these were for no-option or skipped questions that depended on prior questions. For example, if participants answered "No" for the question "Have you ever used non-Governmental online services?", they would skip questions asking them to rate the experience of using non-Governmental online services as well as questions asking them to indicate the influence of such experiences on their intention to use e-Government services. Therefore, the values for skipped questions showed as missing values in the examination; but were not removed as they are not really missed values. These skipped responses will thus be presented in the analysis of each sample.

- *Outliers*

Joseph et al. (2010) defined an outlier as an unusual high or low value on a variable or a combination of values across several variables that make the case stands out from the other cases. The outliers need to be explored during the analysis and their impact needs to be assessed (Joseph et al., 2010). Therefore, the data was examined to detect all possible outlier cases.

Joseph et al. classifies outliers into four types, based on their source:

- Outliers arise from procedural errors such as data entering. The outliers in this case should be detected during the data cleaning and they need to be either removed or recoded.
- Outliers arise from an unexpected case that might create unusual values, such as rainfall values in the case of a storm when studying the average normal daily rainfall.
- Extraordinary cases that cannot be explained or where the reason of their existence is unknown. These cases can be involved in the data analysis, if the researcher feels that they represent a valid element of the population, otherwise, they should be removed.
- Outliers that fall within the usual range of values of each variable. Their uniqueness is not particularly high or low on the variables but in their combination of values across the variables. These outlier cases should be retained unless there is evidence that they can be considered an invalid element of the population.

In order to detect the outliers in the variables involved in this research data, several values were examined including minimum values, maximum values, means and standard deviation values. Moreover, as part of the descriptive and statistical analyses performed in this research, the

composite score for all related and involved measurement items was computed for each factor. Then the values of the computed composite scores were examined further to detect all possible outliers. The research used the standardized score (Z score) procedure to investigate and detect the outliers. According to Tabachnick & Fidell (2007), the Z score should be between -3.29 and +3.29. This means, if Z score of any case either less than -3.29 or greater than +3.29, the case is considered to be an outlier. Therefore, the standardized score (Z score) was computed for all composite values and they were examined to detect outliers. The number and impact of the detected outliers will be presented for each factor in the analysis phase in Chapters 5, 6 and 7.

- *Treating the detected outliers*

Based on the type of data collected in this research (Likert scale and Likert-Type), the detected outliers will fall in the fourth type of outliers according to Joseph et al.'s classification (2010). This is due to the values involved in the collected data having specific ranges. For example, the Likert scale was used for measuring the majority of items and this scale ranges from 1 'Strongly Agree' to 5 'Strongly Disagree'. Therefore, the detected outliers will be addressed and will be retained at the same time during the analysis process. Moreover, if a case was detected to be an outlier in one or more items, it is useful and significant for the study to consider the rest of responses that belong to the detected case. This is another reason for retaining the detected outlier cases during the analysis process. In the descriptive analysis phase, the results were analysed twice, once with the responses of the detected outliers and once without them. In both, the other responses of the outlier cases were retained for the analysis of the other factors. The reason for conducting the descriptive analysis twice is to assess their effect on the results. In the statistical analysis phase, the outliers need to be treated properly in order to conduct the correlation tests. Thus, the outlier cases have been winsorized instead of trimming them. The winsorization of data means replacing the outliers with the next highest/lowest values that are not suspected to be outliers. It is a systematic technique to treat the detected outliers which then improves the accuracy (Field, 2013; Wilcox, 2010). Moreover, treating the outliers with this procedure will help not to violate the 'pair observations' assumption of using the correlation assessment procedures such as in Spearman's correlation procedure.

4.4.2 The descriptive analysis

The descriptive analysis was used to describe the results and interpret them into valuable outcomes. It is used to provide an effective and detailed explanation of the users' behaviour, attitudes and perceptions towards adopting and using e-Government services and transactions. It also provides valuable indications of the level of influence of the proposed factors on the users' adoption and utilisation. Moreover, the descriptive analysis approach was used in this research to examine and validate the proposed conceptual framework and its constructs; and to achieve

the research objectives and answer research questions. The result of each item involved in measuring each proposed factor was described, investigated and analysed in detail. Furthermore, composite values that give indications of the influence of each proposed factor were also computed and analysed. As stated earlier, different 5-point measurement scales were used to measure the majority of the proposed factors. All of them are considered to be Likert scale measurements. Only one factor, namely the Previous Experience (PE) factor, was measured with Likert-type items. The following section explains the differences between the two types of measurements involved in this research instruments (Likert-Type vs Likert scales) alongside with the values and procedures that were used for the descriptive analysis (measures of central tendency). It also explains the procedures that were used as a guide to interpret the results.

- *Measures of central tendency*

A measure of central tendency is a single value that attempts to describe a set of data. It can be represented by the mean, median or mode. Some of these measures are more appropriate than others, depending on different conditions (Laerd Statistics, n.d.). Central tendency is used to represent and summarize the entire set of different and varying values. Khan (2008) states that we define measures of central tendency to find some central values around which the data tend to cluster or concentrate. The mean is the most popular measure of central tendency; and is the sum of all the values of the data set divided by the number of the values. It can be computed by the following formula where $\bar{x}$ denotes the mean, n is the number of values and x_n represents the values (Laerd Statistics, n.d.):

$$\bar{x} = \frac{(x_1 + x_2 + \cdots + x_n)}{n}$$

The median is the middle score of the data set values that have been arranged in order of magnitude. It will be the middle value if the number of values are odd and the mean of the two middle scores if the number of values is even. Finally, the mode is the most frequent value in the data set. Since Likert response measures are used in this research, clarifications of the instrument scales will be presented in the following section.

- *Likert-Type versus Likert Scales*

Clason & Dormody (1994) identified the Likert-Type items as single questions that use some aspect of Likert responses. On the other hand, the Likert Scale is composed of multiple Likert-Type items that are combined into one single composite score/value during the data analysis process. The composite score that combines multiple items represents a quantitative measure for the intended aspect that needs to be measured (Calson & Dormody, 1994). For Likert-Type

items, the recommended descriptive statistics are mode or median for central tendency and frequencies for variability. Whereas for the Likert Scales, the recommended descriptive statistics are mean for central tendency and standard deviation for variability (Boone & Boone, 2012). Most of the scales used in the current research instruments were Likert Scales and thus, the mean and the standard deviation will be used in their descriptive analysis. On the other hand, Likert-Type items were also used to measure one factor, namely, Previous Experience (PE) and therefore, the median and frequencies will be calculated for these items.

- *Clarifying the weighted average for the Likert Scales*

For Likert Scales, weighted averages have been calculated in order to identify the tendency of the composite scores. The numbers that have been entered into SPSS to represent the 5-point Likert Scale represent weights. They were: Strongly agree=1, Agree=2, Don't know or neutral=3, Disagree=4 and Strongly disagree=5. In order to interpret the results of means, we need to compute the weighted averages for the scale. The weighted average can be calculated by dividing the distances between the scale values by the number of values. In 5-point Likert scales, distances (range of data) are 4 since the first distance is between 1 and 2, the second distance is between 2 and 3, the third distance is between 3 and 4 and the fourth distance is between 4 and 5. Moreover, the number of values in the scale is 5. Therefore, the period length would be 4/5= 0.80 which would be used to compute the weighted averages (Alfarra, 2009).

Moreover, there was another 5-point Likert Scale ranging from Very Influential to Very Uninfluential. This scale measures the influence of different advertisement methods. Also another 5-point Likert Scale was used to measure the degree of importance of certain key features when implementing e-Government systems. Thus, the same period length was used for all 5-point Likert Scales. Table 4.5 below illustrates the weighted average categories of all of them, as well as the result interpretation of each category. This table will be used as a guide to interpret the results by identifying the degree of influence of each factor:

Table 4.5: Weighted averages for 5-point Likert Scales.

Weighted average	**Result**	**Result interpretation**
1 – 1.79	Strongly agree/ Very influential/ Very high importance	Very influential
1.80 – 2.59	Agree/ Influential to some extent/ High importance	Influential
2.60 – 3.39	Don't know or neutral/ Don't know/ Medium importance	Neutral or do not know
3.40 – 4.19	Disagree/ Uninfluential to some extent/ Low importance	Uninfluential
4.20 - 5	Strongly disagree/ Very uninfluential/ Very low importance	Very uninfluential

The average values for each variable have been calculated in order to interpret the participants' tendencies and their responses to each factor. Also to analyse their responses to determine the influence of the proposed model's constructs. The findings from this approach to analysis (descriptive analysis) revealed the influence level for each factor that was proposed in the EGAUM. In this approach of analysis, each item was analysed separately to provide a complete view of the factors that have impact on the adoption and utilisation of e-Government services and systems. These findings were used beside the findings from the statistical analysis (explained in the next section) to test the acceptance/rejection of the research hypotheses as well as answering the research questions.

4.4.3 The statistical analysis

In the statistical analysis, the correlation between the independent variables (the proposed factors) and the dependant variables (Intention to use and perceived e-Readiness) will be investigated and analysed. There are several methods that can be used to compute the relationship between variables. The most common methods include Pearson's correlation coefficient, Spearman's correlation coefficient and Kendall's tau. The first one is used for parametric statistics and the latter two are used for non-parametric statistics. Each of these has a number of assumptions that need to be met. The next section briefly explains each procedure.

- ***Pearson's correlation coefficient***

Pearson's correlation coefficient (denoted as *r*) measures the strength and direction of a relationship between two variables. Its value can range between -1 (perfect negative linear relationship) and +1 (perfect linear relationship) where 0 indicates no linear relationship (Laerd Statistics, n.d.). The closer the value is to 1 or -1 the stronger the linear correlation (Vaughan, 2003: 98). According to an often-cited guideline by Cohen (1988), the correlation coefficient value is interpreted as follows:

- Strong $r = .50$ to 1.0
- Moderate $r = .30$ to .49
- Weak $r = .10$ to .29

This guideline indicates the strength of the correlation, regardless of the sign of the value. The value sign only indicates the direction of the relationship. This means $r = 5$ and $r = -5$ are the same strength but with different directions. Using Pearson's correlation coefficient requires four assumptions to be met in the analysed data (Laerd Statistics, n.d.). These assumptions are:

- The two variables should be measured at the interval or ratio level.
- There needs to be a linear relationship between the two variables.
- There should be no significant outliers.
- The data needs to satisfy the assumption of normality.

- ***Spearman's correlation coefficient***

Spearman's correlation coefficient (denoted as *rs*) measures the strength and direction of relationship between two interval variables, two ordinal variables or one interval and one ordinal. There are three assumptions that need to be met in order to use this method. These assumptions are:

- Two variables that are measured are on a continuous and/or ordinal scale.
- The two variables need to represent pair observations.
- There need to be a monotonic relationship between the two variables.

The interpretation of the Spearman's correlation coefficient is similar to that of Person's correlation coefficient. In other words, the closer *rs* is to +1 or -1, the stronger the relationship. Also the sign indicates the direction of the relationship (Laerd Statistics, n.d.; Statstutor, n.d.). In order to decide which procedure should be used, the normality test has been conducted on all the independent and dependent variables where the correlation between them needs to be measured. This test indicates whether the data is normally distributed (to use Pearson's coefficient) or not (to use Spearman's coefficient).

- ***Test of normality***

The Shapiro-Wilk procedure was conducted to test the normality of the data. There are two hypotheses related to this normality test, namely, the null hypothesis and alternative hypothesis. The null hypothesis is that the sample is normally distributed and to accept this hypothesis, Shapiro-Wilk needs to be > 0.05. The alternative hypothesis is that the sample is not normally distributed. This means that if Shapiro-Wilk < 0.05 then the sample is not normally distributed. The normality test for the majority of the variables involved in the correlation assessment indicates that their data is not normally distributed. This is due to the type of data collected for this research. The results of the normality test will be presented in the analysis of each variable in Chapters 5, 6 and 7. Thus, Spearman's correlation procedure was utilised as the correlation assessment procedure for all hypothesized relationships. As stated earlier, the results of the correlation tests involved in the statistical analysis phase alongside the results of the descriptive analysis phase were used to test the acceptance/rejection of the research hypotheses as well as answering the research questions.

Since some of the proposed factors were measured in more than one part of the items using different scales, the standardized value (Z score) was computed for each part in order to produce a standardized composite score for the factors (Salomon, 2000; Vogt, 2011). Standardizing different values of two variables is an important step when assessing the correlation between them; and will eliminate differences between the two variables involved in the correlation test, such as differences in the measurement scales (Hall, n.d.).

4.5 Ethical considerations

Each survey contained a covering information sheet that explained the purpose of the research; gave an overview of e-Government and also provided some examples of e-Government systems and services to give the participants a clear definition of the topic. It also gave the participants instructions on how to participate both in terms of responding to the questionnaire (primary participation) and participating in the short interview (optional participation). The expected time for participation was also stated. The information sheet also indicated that participation was voluntary and all the collected data and information would be kept confidential. Moreover, it indicated that participants were free to withdraw at any time and without giving a reason. Contact details for the researcher and supervisor were also provided in the information sheet in case the respondents had any concerns. A consent form was also provided and to be signed before participating.

An application was submitted to the Science and Technology Cross-Schools Research Ethics Committee (C-REC) at the University of Sussex and approval was obtained for this research.

Chapter Five: Data analysis and discussion from the citizens' perspective

5.1 Introduction

In the previous chapter (Chapter 4), the research design and methodology were discussed including the research philosophy that was adopted, data collection methods and techniques that were employed and data analysis procedures that were utilised to achieve the research aims and objectives. As explained in Chapter 4, the research targeted three different samples of e-Government systems and services users to provide comprehensive outcomes and results. Those three samples were public users (Saudi citizens), government employees and users from the business sector. This chapter (Chapter 5) will present, discuss and analyse the data that has been collected from the public users in Saudi Arabia (Saudi citizens). The total number of citizens who participated in this study was 461. The valid responses were 416 after data screening and preparation. In addition, 18 citizens participated in the short semi-structured interviews.

The aim of this chapter is to explore and discuss the factors that influence citizens' adoption and utilisation of e-Government services. Data cleaning and screening procedures including the detection of untargeted cases, missing and incorrect data as well as outliers' detection were performed before proceeding to the analysis of the collected data. The following section (Section 5.2) will present and discuss the demographic data. Section 5.3 will present and discuss the results from the descriptive analysis of this sample. Section 5.4 will present and discuss the results from statistical analysis of this sample including testing and assessing the hypotheses. This section will also present and discuss the results from the short semi-structured interviews that were conducted with number of participants after completing the survey. Section 5.5 will provide a summary of the most significant factors that impact the citizens' adoption and use.

5.2 Demographic data

This section presents the demographic data that was collected from the survey entitled "Analysing key factors that influence the adoption and utilisation of e-Government systems: Citizen Users." The participants were asked questions aimed at collecting demographic information including gender, age group, education level, occupation, monthly income, marital status, proficiency in using computers and Internet use rate. They were also asked questions related to their use of online services, whether governmental or non-governmental services. The survey also included questions about the methods that the participants use when accessing and paying for governmental services. The collected demographic data provides an overview of the participants who responded to the study; and Table 5.1 below presents a summary of the demographic data for the citizens' sample.

Table 5.1: Demographic data for the citizens' sample

		Percentage (%)
Participants' gender	Male	93.2
	Female	6.7
Participants' age in years	18 – 30	27.6
	31 – 45	54.5
	46 – 60	16.5
	Over 60	1.2
Participants' education level	Secondary school or less	7.9
	Diploma	14.4
	Bachelor	48.3
	Master	23.8
	PhD	5.5
Participants' occupation	Unemployed	3.3
	Student	3.3
	Government employee	55.2
	Private sector employee	30.5
	Self employed	7.4
Participants' monthly income in SAR (1 GBP ≈ 4.7 SAR)	0 – 4999	9.3
	5000 – 9999	22.1
	10000 – 14999	32.2
	15000 – 19999	22.8
	20000 or more	13.4
Participants' marital status	Single	18.7
	Married	79.8
	Divorced	1.4
Proficiency in using a computer	Low	1.9
	Average	12.9
	Good	38.7
	Excellent	46.3
Internet use rate	Several days a week	7.6
	Several days a month	1.2
	Several days a year	0.48
	Everyday	90.6
Knowledge about EGOV before participating	Yes	89.1
	No	10.8
Willingness to know more about EGOV	Yes	91.3
	No	8.6
The use of online government services	Yes	93.9
	No	6
The use of online non-governmental services	Yes	86.5
	No	13.4

Participants' gender

Table 5.1 reveals that 93% of participants (388) were male, and around 7% were female, consisting of only 28 participants. One of the main barriers and difficulties in this research was to collect data personally from female participants, due to religious and cultural reasons. These percentages were no surprise, and it was predicted at the research design stage that the majority

of the participants would be male. Generally, it is challenging for male researchers to collect data from female participants in Saudi Arabia. However, the researcher attempted to collect data from female participants and managed to include 28 female participants. Although the male participants outnumber female participants, the sample is representative in the sense that in Saudi society, males normally conduct many more government transactions than females. For many government transactions and services, females need to authorise one of their male family members, such as a husband, father or brother, to conduct government transactions on their behalf. Moreover, males are responsible for conducting or completing certain government transactions that belong to their family members such as issuing ID cards and passports. Therefore, males access government services and conduct transactions a lot more than females in Saudi Arabia.

Participants' age groups

Table 5.1 also shows that more than half the participants (54%) were between 31-45 years old. The participants aged between 18-30 years old represent around 27% of the total participants. The data collection process for this sample was carried out in public areas, including the waiting areas of several government agencies where citizens were conducting government transactions. The government agencies that were visited to collect data were amongst the most common agencies to provide e-Services. The table also shows that participants who were aged 46-60 represent 16% of the total participants. Furthermore, citizens over 60 years old were the smallest age group that participated in the study (only 1.2%); and this is because of several possible reasons. Normally in Saudi Arabia, citizens aged over 60 do not like to go to shopping centres, where the data collection took place. Moreover, it is common in Saudi Arabia that citizens aged over 60 authorize one of their family members to complete their government transactions, and thus no direct contact was possible with many members of this age group. Furthermore, government departments normally provide a quick service for senior customers so they do not have to wait in the waiting areas. Also after screening the questionnaires, it was found that most of incomplete responses were from senior citizens, and it is likely that they did not want to complete the questionnaire, as it was relatively long for them.

However, the sample is representative of the Saudi population as the majority of Saudi citizens are between 15 – 54 years old with an average age of 26.4 years (see Table 5.2) (Indexmundi, 2014).

Table 5.2: Saudi Arabia's age-based population (Indexmundi, 2014)

Age group	**Percentage**
0-14	27.6%
15-24	19.3%
25-54	45.4%
55-64	4.5%
65 and over	3.2%
Total	**100%**

Participants' education level

Table 5.1 reveals that the majority of the respondents (48%) hold a Bachelor degree; 23% of them hold a Masters degree and 5% of them hold a PhD degree. Around 14% of the total participants had a Diploma degree; and approximately 8% had completed their public education (secondary school) or completed less schooling than that. The overall education level was as expected, and it is representative, since the recent report of the General Authority for Statistics in Saudi Arabia revealed that large percentage of citizens aged between 25 – 60, which is the age group of the majority of the participants, hold a Bachelor degree (Saudi General Authority for Statistics, 2014).

Participants' occupation

Table 5.1 also shows that more than half the respondents were government employees (55%). Government employees include public education teachers, university lecturers, government officials and all military sector employees. Employees in semi-government organisations may also included in the category of government employees. This includes employees in companies that are owned by the government such as the ARAMCO Company, which is the largest oil company in Saudi, and also the SABIC Company, which is a large Saudi Arabian basic industries corporation. The large numbers of jobs that can thus be categorized as government jobs in Saudi Arabia explains the large proportion of government employees in the research sample. Moreover, about 30% of the participants were employees in the private sector in Saudi Arabia.

Participants' monthly income

It is clear from Table 5.1 that the participants' monthly incomes are spread among the proposed group options. It shows that the monthly income of 32% of the participants is between 10,000-14,999 SR; and around 23% of the respondents have a monthly income of 15,000-19,999 SR. Almost the same proportion of participants (22%) have a monthly income of 5000-9999 SR;

although participants with a monthly income of 4999 SR and below represent 9% and participants who earn 20000 SR represent 13% of the total respondents. It is clear that this sample contains participants from all the monthly income categories; and in this way the sample reflects a spread of income groups.

Participants' marital status

In Saudi Arabia, the marriage rate is high and it is growing every year. In 2014 for example, the marriage rate grew by 30% (Ajel, 2014). Marriage is a very important relationship in Saudi society; and there are many cultural and religious reasons that support and encourage people to get married in Saudi Arabia. Therefore, it is expected that a large proportion of the respondents will be married. Indeed, Table 5.1 shows that the majority of the participants were married (79%); 18% of them were single and only 1.44% were divorced. This supports the representativeness of the sample and these proportions are because of the reasons stated earlier about the social structure, culture and religion. Moreover, married individuals are expected to carry out many more government transactions than single individuals. This is because the person who is responsible for a family (the father or the husband) usually needs to access many government services for his family and carry out many government transactions on behalf of many of his family members. Married (male) individuals are thus more likely to have experience of using e-Government services and can comment on them.

Proficiency in using computers

The results show that most participants believe they have a high level of proficiency in using computers. The high overall level of proficiency that is clear from the results is likely due to the high education level of the majority of the respondents. Over three quarters of them had at least a Bachelor degree and thus, it was expected that they would have good knowledge and skills about using computers and also Smart technologies in general, including tablets and Smart phones.

Participants' Internet use rate

Table 5.1 shows that the overwhelming majority of the respondents (90%) use the Internet on a daily basis. Internet use has become a major part of many Saudi citizens' lives in recent years. We rely on the Internet for many daily activities including email correspondence, socialising, shopping and learning. Therefore, it was expected that most of the surveyed participants would be using the Internet daily. This high use of Internet suggests that the sample would possibly have a higher tendency to use online services including government e-Services. However, the results also revealed that almost all the participants aged over 60 did not use the Internet daily. This is possibly because of their education level, their lack of proficiency in using computers

and related technologies or even because of technology resistance. This gives an indication that seniors are likely need special consideration when providing e-Government services.

Participants' knowledge about the term 'e-Government'

The survey reveals that the majority of the respondents (89%) have some knowledge about e-Government in Saudi Arabia. This does not mean that all of them have used its services, but at least they know what the term 'e-Government' means. This high recognition of the term 'e-Government' suggests that the sample will be able to understand all parts of the questionnaire. This will ensure that the participants can provide precise information about the factors that influence their e-Government services adoption and use.

Participants' willingness to know more about e-Government

Table 5.1 also shows that the majority of respondents (91%) had a willingness to know more about e-Government, including its services, potential and benefits. It is likely that participants who did not want to know more, either believe that their current knowledge is enough for them or do not intend to use such e-Services. Given the participants' desire to know more about e-Government potentials and services; there is possibly a lack of awareness of campaigns on the part of e-Services providers to publish this information. The results reveal that users generally wish to know more about the systems that they use, but that they have not yet accessed the information required to meet these needs.

Participants' use of online services (governmental and non-governmental)

Table 5.1 shows that the majority of respondents (93%) have used e-Government services and only 6% of them have not. The use of e-Government is not limited to applying for or completing government e-Transactions, it also includes the obtaining of information from government agencies such as driving penalties, information about opening hours and information about the locations of the government offices.

The survey also obtained information about why respondents did not use e-Government services; and the results showed that 12% of participants who have not used e-Government services do not have an Internet connection. Moreover, around 40% of them reported that using e-Government services is difficult for them. Approximately 32% of them reported that they do not trust e-Government systems to adequately carry out government transactions while 36% reported that the e-Services that they need are not available through e-Government systems.

In terms of non-governmental online services such as online banking, online shopping and online payment, Table 5.1 shows that 86% of the respondents have performed such online services while around 13% have not. The information collected about participants' use of any

form of online services will help to analyse the influence of previous use of such online services on the use of e-Government services.

Methods to obtain information related to government services

The participants were asked to stipulate which methods they usually employ to obtain information related to the government transactions that they need. This information includes required documents, required processes, office locations, and also office opening hours. Several methods of obtaining such information were proposed as options in the questionnaire, including calling by phone, asking others, finding the information from the agency's website, searching on the Internet and visiting the intended agency. This item provides an indication about the participants' intention to use online means to obtain needed information; and is intended to show whether the respondents prefer to use online services or traditional ways to gain information related to their government transactions.

Figure 5.1 below reveals that the method most used to gain this kind of information is to search on the Internet; with 63% of the total participants selecting this option. Searching on the Internet means finding the needed information from websites other than the agencies' websites; these websites might be general forums, online threads or online social websites. Moreover, around 49% of the respondents reported that they usually use the agencies' official websites to get the information they needed. These percentages give an indication that many participants use online methods to obtain information about government services and transactions so it is crucial to provide sufficient information.

On the other hand, the use of traditional methods to obtain information was also relatively high; as it is clear from the graph that the three highest methods that the respondents sometimes use to gain information they need for their government transactions were traditional methods. These were obtaining information by asking others (relatives and friends), by visiting the intended agencies and by calling the agencies (53%, 53% and 45% respectively). These percentages indicate that although the majority uses online methods for the purpose of obtaining information, there is still heavy reliance on traditional methods. This reliance is still high amongst the participants because of several possible reasons. The individual might not find reliable, trusted and updated information on the Internet. Even if the needed information was obtained from the official website of the intended agency, it might not be updated and valid. This case is likely to occur with government departments that do not provide many e-Services and where published information is often not regularly updated. Therefore, customers obtain the latest information by asking relatives or friends who have recently carried out those transactions or by visiting the intended agency in person and asking them directly.

The figure also shows that almost 43% of the total participants have never used the method of calling the intended agency by phone. This is probably because many government offices in Saudi Arabia neither provide a call centre service nor publish phone numbers on their websites. It is also possible that negligence on the part of call centre employees has meant that many agencies do not like this means of communication with citizens.

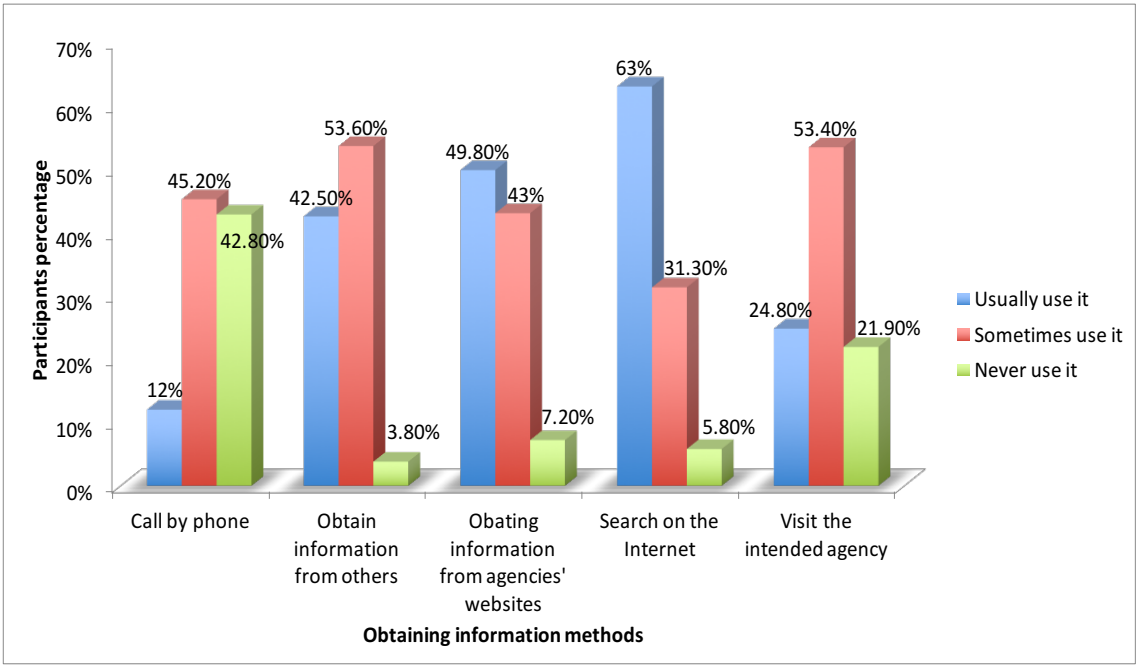


Figure 5.1: Methods of obtaining information about government transactions (citizens' sample) (see appendix G for larger graph).

We can conclude that the result of this item indicates that the majority of participants do use online methods to obtain relevant information, whilst at the same time they still sometimes rely on traditional methods. This gives a strong indication that providing information related to government services and transactions electronically may still not be perceived as reaching a satisfactory standard. Much information is usually needed when conducting government transactions including what documents are required and even instructions on conducting transactions; and such information should be readily available electronically.

Methods to pay for government transactions

Many government services and transactions in Saudi Arabia require fees that need to be paid by the beneficiaries. A few years ago, customers had to pay for government transactions by cash through different bank branches. This caused a heavy burden on the banks and was an inefficient and slow process, especially with the growth of customers and transactions. Thus, the Saudi Arabian Monetary Agency introduced a payment system called SADAD that links the banks with the payees (Saudi Government, n.d.). This system acts as a mediator between the banks and the beneficiary entities be they government organisations or private firms. It helps

customers to pay for services, bills and fees easily; and enables them to use their online banking services, ATM machines, phone banking as well as bank branches for their payments. Although this system has solved most of the payment problems in Saudi Arabia, it is almost the only electronic means to pay bills and for services. This means that the government agencies in Saudi Arabia do not provide a direct payment system that would enable customers to use their debit and credit cards for the payment of fees.

In this study, the researcher aimed to explore the methods that the participants usually use to pay for their government transactions. Several options are proposed in this item, including paying through online banking, using ATM machines, phone banking, visiting banks, asking relatives or friends to pay and asking service offices to pay. This item would give us an indication about the participants' intentions to use online methods for their payment, and also whether they usually pay for their transactions themselves or by asking others to do so.

The bar chart below (Figure 5.2), clearly demonstrates that the majority of the respondents (69%) usually use online banking to pay for government transactions. This is a good indication of a high level of intention to use online methods for government transaction payments. Using ATM machines for transactions and service payments comes second in terms of frequency of use. This is probably because many banks provide ATM machines next to government offices to encourage customers to use them for payments. The graph shows that almost 42% of the respondents usually use this method.

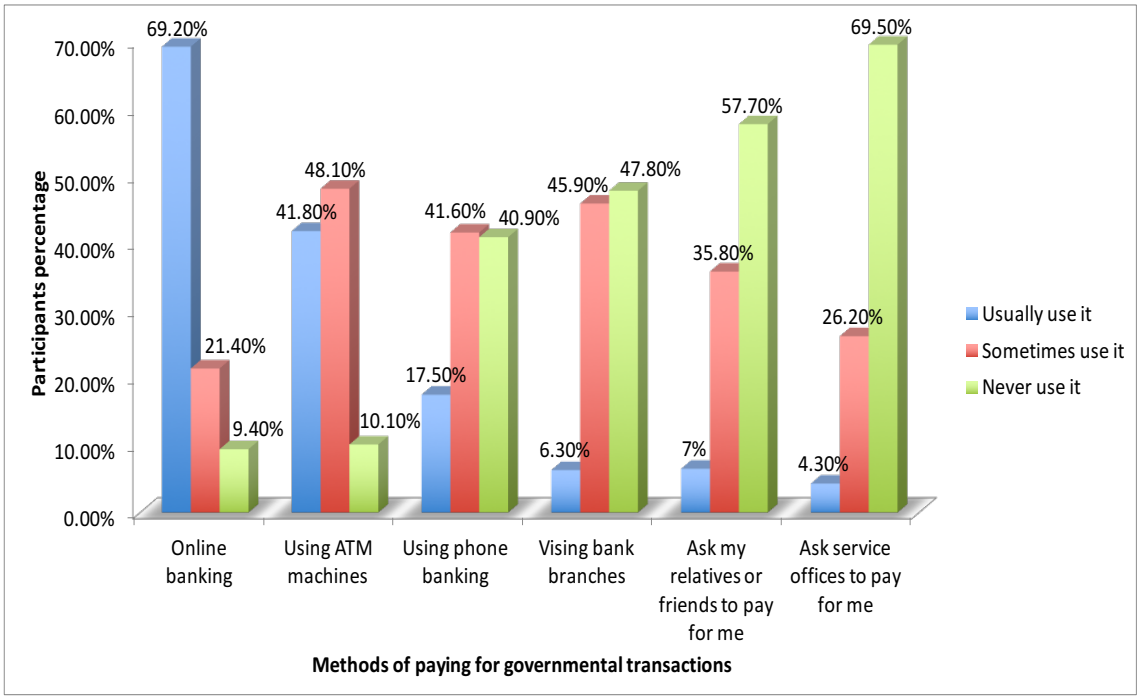


Figure 5.2: Methods of paying for government transactions (citizens' sample) (see appendix G for larger graph).

On the other hand, the traditional methods, including authorizing a third party to pay or visiting banks in person were the least frequent methods that the participants use for transactions and services payment. A few years ago, service offices opened around government agencies to help customers with their applications and also with their transaction payments. These offices charge customers for providing these services; and they still exist, but less than before. The results show that the majority of the respondents were more independent in terms of paying for transactions and services fees. Around 69% of them reported that they never used service offices to pay on their behalf, while 26% of them have used this method. Furthermore, 57% of the respondents reported that they do not ask their relatives or friend to pay on their behalf, while 35% do so. Approximately 47% of the participants have never visited the banks in person to pay for their services and transactions, whereas 45% reported that they sometimes visit banks for that purpose. Generally, the respondents tend to use the electronic and online methods more frequently than traditional methods. The education level and the age of the sample participants are likely to play a role in this tendency.

5.3 *Descriptive analysis of the proposed factors from the citizens' perspective*

In this section, the collected data will be analysed in relation to the EGAUM constructs. The participants were asked to describe several characteristics including their attitude and behaviour towards adopting and utilising e-Government systems and services. Such characteristics were measured by number of statements using different Likert Scales. Likert Scale scores (composite scores) were also calculated in order to interpret the participants' responses. The scales used for measurement (including the type of Likert scale) will be presented and explained in the section for each construct. Moreover, details about the collected data including response frequencies, means/median and standard deviation/Inter-Quartile Range for each item are presented in Appendix A.

Perceived Benefits (PB)

The *Perceived Benefits* factor was measured with seven items in the survey for public users (citizens). The items for measuring the influence of the *PB* factor have collected data about the participants' perceptions of the benefits that they can gain from using e-Government systems. All the involved items were measured with a 5-point Likert scale ("Strongly agree", "Agree", "Neutral or do not know", "Disagree" and "Strongly disagree"). The measuring items are listed in Table 5.3 and the results are presented in the combined graph in Figure 5.3; and the results are then discussed.

Table 5.3: The PB factor measured from the citizens' perspective

Constructs	Item code	Measure
Perceived Benefits	PB1	EGOV would enable me to perform government transactions quicker than traditional ways.
	PB2	I think that EGOV would save me multiple visits to different agencies when performing transactions.
	PB3	Using EGOV would save me time, money and effort.
	PB4	Using EGOV would reduce my dependency on others (friends, service offices … etc).
	PB5	I believe that using EGOV would reduce procedures that delay my transactions (intercession letters, documents ratification … etc).
	PB6	I believe that EGOV would ensure equality when processing users' transactions.
	PB7	The ability to perform governmental transactions 24/7 would encourage me to use EGOV more.

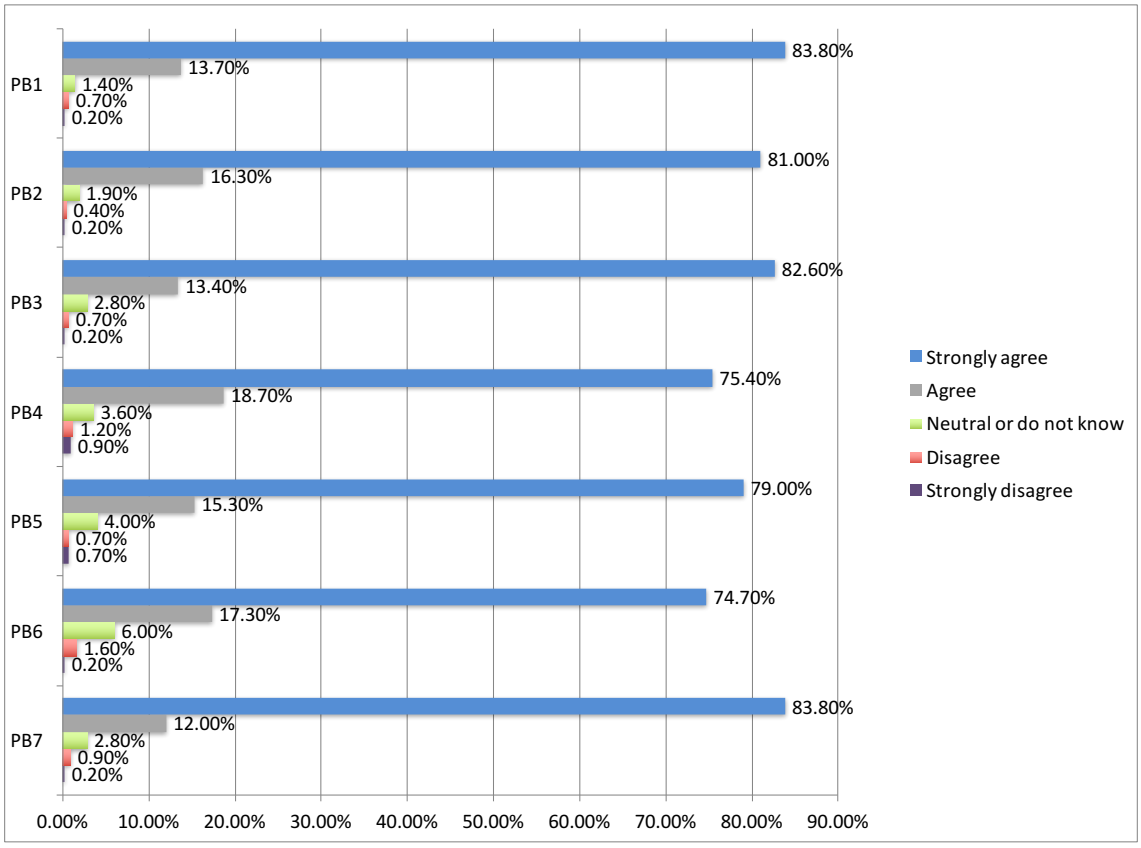


Figure 5.3: The results of PB measurement items (citizens) (see appendix G for larger graph).

Item PB1 asked the participants whether they believe that using e-Government services would enable them to carry out transactions more quickly than the traditional ways. Figure 5.3 shows that the vast majority of the respondents (96%) agreed with this statement, whereas only 1.44% of them were neutral, and less than 1% of the respondents disagreed with this statement. The total score of this item was 1.19 indicating that the participants' perception was highly positive in terms of the speed of completion of transactions through the use of e-Government.

Since many government services and transactions in Saudi Arabia require processing by several agencies, customers need to visit different agencies to complete their transactions. Even after implementing e-Government with a number of services and transactions, there is still insufficient integration between many agencies to enable the process to be completely electronic. Thus, item PB2 asked the participants to determine whether they think that e-Government systems would save them multiple visits to different government agencies when performing government transactions. Figure 5.3 shows that the overwhelming majority of the respondents (97%) agreed with this statement, almost 2% were neutral or did not know and less than 1% disagreed. This item's composite score of 1.22 revealed a very high level of agreement that the successful integrated implementation of e-Government systems would reduce, if not eliminate, multiple visits to different government departments.

The participants were also asked, in item PB3, about whether using e-Government would save their time, money and effort. Approximately 95% of the total respondents agreed that it would, less than 1% disagreed and around 3% of them were neutral or did not know. The total score of this item was similar to that of the previous item (1.22), and this reveals a very high level of agreement that the use of e-Government would save the users' time, money and effort. This result was expected, as making government transactions in Saudi Arabia consumes a lot of time, money and effort. Completing government transactions might take several days to be completed due to several external reasons, including traffic, the long distance between agencies and the need to visit different agencies. It is even harder for employees who work at the same time as government agencies' working hours. Conducting government transactions and accessing services might negatively affect their performance and how their commitment to their job is perceived. Bearing in mind that there is no effective public transportation in Saudi Arabia, such as trains and buses, this means that doing this in person takes up considerable time, money and effort.

Many individuals in Saudi Arabia seek help from others for a variety of matters related to government transactions. For example, a number of service offices (some of them licensed and some not) can still be found around many agencies, and some people rely on these service offices for obtaining updated information on procedures and requirements, to book appointments, pay fees and also conduct transactions. Moreover, it is common in Saudi Arabia that individuals seek help from friends or relatives to obtain information related to government transactions. Some people spend time to find the person who can provide the right information, who is usually someone who has recently performed this same transaction. Figure 5.1 (presented earlier in section 5.2) shows that the vast majority (95%) of respondents obtained the information that they needed to conduct government transactions by asking others. All of these examples represent what can be called 'dependency on others' for performing government

services and transactions. Reducing such dependency is considered to be a benefit, and implementing e-Government systems could dramatically minimise this dependency on others. Thus, item PB4 asked participants whether they believe that the use of e-Government would reduce their dependency on others. The bar chart of item PB4 (see Figure 5.3) shows that 93% of the respondents agreed that using e-Government would provide this benefit, while only 2% of them did not agree. Around 3% of the participants reported a 'neutral or do not know' answer. The total score of this item was 1.33, revealing a high level of agreement that the use of e-Services provided by e-Government systems will reduce dependence on others.

In relation to item PB5, some government transactions in Saudi Arabia require extra procedures that can delay the process. For example, employees who work in the private sector need to ratify letters that they request from their companies, such as confirmation of employment and confirmation of salary letters; as they often need to provide such letters as a requirement for certain government transactions. Normally the Chamber of Commerce and Industry ratify the employees' documents. Moreover, intercession letters are required for some government transactions. The main reason for this kind of document is to explain the purpose of performing the transaction and the status of the transaction especially in complex cases. In some cases, these letters are provided as part of the normal requirement when applying for certain government transactions. These procedures usually cause a delay in processing the transaction. Thus, in item PB5, participants were asked to determine to what extent they agreed that "using e-Government would reduce procedures that delay their transactions". Around 94% of the respondents agreed with the statement, 4% were neutral and just over 1% disagreed. The total score of 1.28 indicates that there is a highly positive perception about the benefit of reducing the aforementioned procedures that delay the processing of the transaction when using e-Government systems - or at least a desire to make these procedures electronic.

The reality in Saudi Arabia is that when dealing in person, some government transactions might be processed faster than other transactions; and they also might be processed and completed without the provision of required documents. This could happen if the person requiring the transaction has a personal relationship, i.e. they are a neighbour, friend or relative of somebody in the intended agency. Generally, this practice is unacceptable in Saudi society and it is strongly criticised by government agencies since such practices result in unfairness and inequality; however, some individuals still use such methods to access services and complete their transactions. Since every process in electronic systems can be registered and tracked, e-Government can easily reduce (if not eliminate) this practice or any other method that can lead to inequality in service and transactions processes. Therefore, item PB6 asked the participants whether they believe that e-Government systems would ensure equality when processing users' transactions. The results showed that 92% of the respondents agreed that they would, around

6% were neutral or did not know and 2% disagreed (see Figure 5.3). The total score of item PB6 was 1.35, indicating a very positive perception of the ability of e-Government systems to ensure equality in services and transactions processing. This benefit is very likely to increase the adoption and usage level if it is implemented as expected.

In item PB7, the participants were asked to indicate whether the ability to perform government transactions any time (24 hours/7 days) would encourage them to use e-Government services. Figure 5.3 shows that the majority of the respondents (95%) agreed that they would be encouraged to use such e-Services if they were available at any time. A very low percentage of participants were neutral or disagreed (3% and 1% respectively). This item's score of 1.21 indicates that providing e-Government services and making them available at any time is very likely to increase and ensure high adoption and utilisation. The results of this item were expected, since accessing government services and carrying out transactions are inconvenient for many individuals, especially employees. This is because they need to be excused by their employers or organisations in order to complete government transactions during working hours. The situation is even more difficult when the transaction requires multiple visits to the same agency or to different agencies. Moreover, some government departments open at night in specific seasons such as Ramadan in order to process and complete customers' transactions. Providing successful e-Government systems that offer e-Services all the time would definitely solve many issues related to time and effort.

The computed composite score for the *PB* factor was 1.26, indicating that the *Perceived Benefits* factor is very likely influence the adoption and utilisation of e-Government systems. Based on the guide that is proposed in this study to interpret the results of the descriptive analysis (see Table 4.5 in Chapter 4), it is likely that *PB* factor is a very influential factor on the citizens' adoption and utilisation of e-Government systems and services. The computed score was investigated to detect if there was any outlier that might be affecting the result. The score was transformed into a standardized value (Z score) in order to find any case out of the range -/+ 3.29 which would be considered as a potential outlier (Tabachnick & Fidell, 2007), (See section 4.4.1 in Chapter 4). The outlier test detected 8 cases with +3.29 values and the composite score of *PB* factor was recalculated without the detected outliers to explore if there were any serious effect on the results. The new recomputed composite score was 1.22 which means that there is not much difference between the both scores (1.26 and 1.22); thus, the detected outliers do not have a strong influence on the results.

Socio-Cultural (SC)

The *Socio-Cultural* is another factor that was proposed in the research model (EGAUM). In this citizens' sample, *SC* was measured with 7 items concerned with different social and cultural aspects such as the influence of others, the influence of interpersonal relationships (*wasta*) and technology resistance. All the items were measured using a 5-point Likert scale ranging from "Strongly agree" to "Strongly disagree". The combined graph (Figure 5.4) presents the results of all items involved in the measurement of the SC factor.

Table 5.4: The SC factor measured from the citizens' perspective

Constructs	Item code	Measure
Socio-Cultural	SC1	Using EGOV would enhance people's perception about me and make me feel sophisticated.
	SC2	The use of my family members and my friends for EGOV will encourage me to use it.
	SC3	I believe that EGOV would reduce the influence of interpersonal relationships (wasta) on processing individuals' transactions.
	SC4	I feel that dealing with government agencies physically (face to face) is better than using EGOV.
	SC5	Using EGOV would prevent the negative influence of some uncooperative employees on my transactions.
	SC6	I feel that visiting agencies to track my transactions is better than tracking them online.
	SC7	I prefer authorizing service offices to perform my transaction to using EGOV.

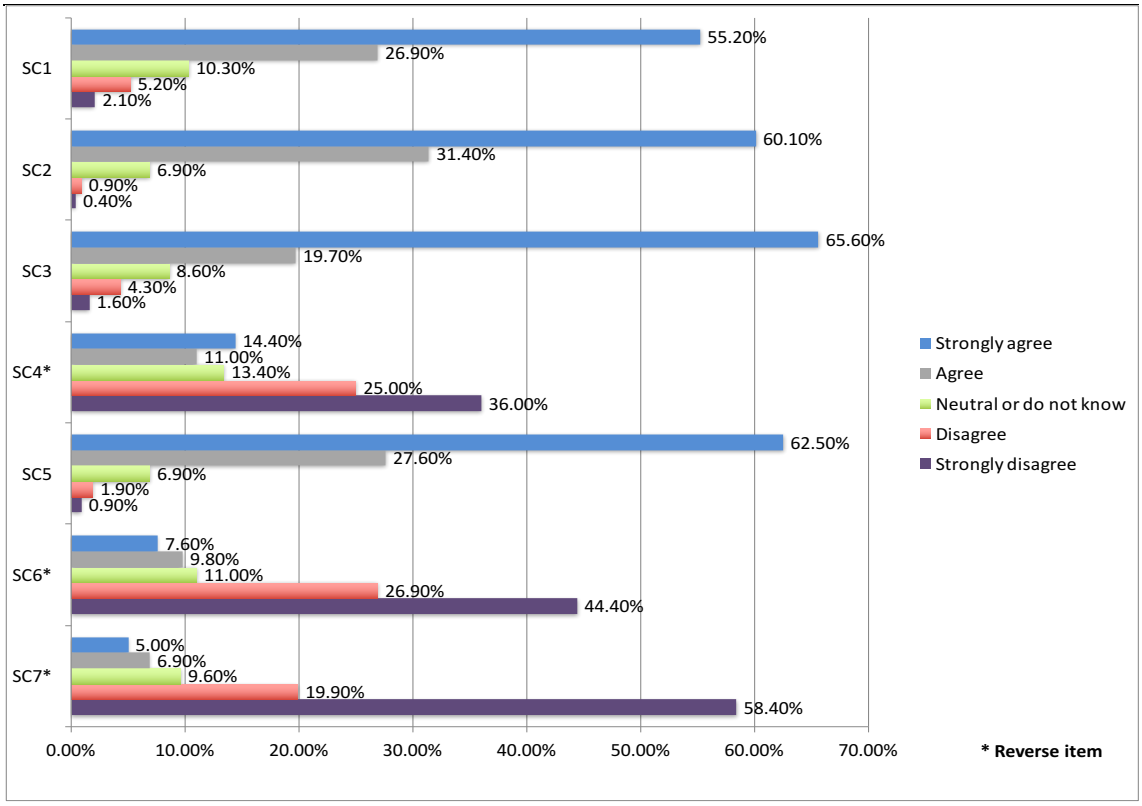


Figure 5.4: The results of SC measurement items (citizens) (see appendix G for larger graph).

In item SC1, the participants were asked whether using the online services provided by e-Government systems would have an impact on their image and the way people think about them. Figure 5.4 shows that the overwhelming majority of the respondents (82%) agree with the proposed statement, 7% disagree and around 10% of the respondents are neutral or do not know. Those who disagreed or were neutral possibly did not feel that their social status rested on their use of e-Government; or did not know how significant others felt about it. The total score for this item was 1.72, indicating a high level of influence of other people's perception about the use of e-Government online services.

Item SC2 is also concerned the influence of others and specifically the influence of e-Government use by relatives and friends. The respondents largely agreed with the statement "The use of my family members and my friends for e-Government services will encourage me to use them". Figure 5.4 shows that an overwhelming majority (91%) agreed (from strongly agree to agree) while only 1.44% disagreed (from strongly disagreed to disagreed) with the statement. The Likert score of 1.5 suggests that the use of family members and friends is very likely to influence the adoption and usage level of e-Government systems.

Strong interpersonal relationships are one of the good social aspects in any society; however, they can be just the opposite if exploited negatively. In Saudi Arabia, *wasta* is a common term for exploiting personal connections to either accelerate the process of transactions, which can involve queue jumping, or having exceptions made to the rules or the required documents when conducting government transactions. The electronic transformation of government services and transactions can significantly reduce the use of such a negative socio-cultural aspect. Thus, the participants were asked in item SC3 to indicate whether they believe that the electronic transformation of the government procedures and transactions through e-Government systems would reduce the influence of *wasta* on processing their transactions. As shown in Figure 5.4, more than three quarters (85%) of the respondents agreed (from strongly agree to agree), with a small number (6%) disagreeing (from strongly disagree to disagree), only 8% of the respondents were neutral. Although the use of personal connections (*wasta*) when processing government transactions can exist even with the electronic transformation, the Likert score for this item (1.56) shows a very positive perception of the ability of e-Government systems to reduce and control this negative practice.

As shown in Figure 5.4, more than half of the respondents (61%) disagreed with item SC4 that stated "I feel that dealing with government agencies physically (face to face) is better than using e-Government", with a quarter of the respondents (25%) agreeing and around 13% showing neutrality. The statistical evidence gives a Likert score of 3.57 to support the preference for online interaction with government agencies. In spite of the benefit of using electronic systems

for government transactions, there are some individuals who prefer to interact with government departments in person, but they represent just a quarter of the participants. The results for this item were investigated further using a cross-tabulation procedure and it was found that age is likely playing a role in preferring physical interactions. Most of the senior participants (60%) reported that they prefer dealing face-to-face with government departments. Moreover, a similar percentage (60%) of the respondents who did not agree that online interaction is better than face-to-face interaction have not used e-Government services before; hence, they possibly do not know the benefits of using such e-Services and prefer using the traditional way. It is also likely that they do not trust online services, especially when government transactions are involved, or they prefer to have tangible and immediate interaction due to cultural reasons.

In some cases, employees who work in government agencies might negatively affect the process of transactions due to several reasons such as negligence and applying bureaucratic procedures in some cases. Thus, the participants were asked in item SC5 to indicate their view on the statement "Using e-Government systems would prevent the negative influence of some uncooperative employees on my transactions". Figure 5.4 shows that the overwhelming majority (90%) of the respondents agreed, whereas only 3% disagreed with the statement, giving a Likert score of 1.5. The result suggests that the respondents thought that their transactions would be treated and processed correctly when using e-Government services and systems, without any possible negative influence from some government employees.

The result of item SC6, presented in Figure 5.4, also shows that the majority of the respondents believe that online interactions with government agencies is better than interaction in person. This item asked the participants whether they feel that visiting agencies to chase and track their performed transactions is better than chasing them online. Around 71% of the surveyed participants disagreed, around 11% were neutral or did not know and 17% of them agreed. The total Likert score was 3.9 and this indicates that in addition to the wide agreement amongst the participants on that the online interaction is better than face-to-face dealings, the preference for chasing and tracking the completed transaction online was also high.

Another cultural habit in Saudi Arabia is to authorise a third party or the so-called 'service office' to perform government transactions on behalf of the beneficiary. This method of performing government transactions is very popular in Saudi society, especially with individuals who do not have time to visit government departments. Although the use of this method has been reduced recently with the implementation of e-Government services, it is still widely used. Even after the implementation of several government e-Services, many individuals authorise these service offices to perform online transactions on their behalf. Many service offices have recently provided different services that are related to the use of e-Government

systems. They create online accounts and activate them on behalf of the beneficiaries and they charge fees for these services. Furthermore, many individuals seek help from these service offices to register their information and apply for different transactions. Using such a method with the online e-Service provided by government is very risky, as these service offices can access the beneficiaries' accounts without their knowledge and permission (Alhomaidan, 2014). Therefore, item SC7 asked the participants whether they prefer authorising service offices to perform their transactions to using e-Government systems. It is clear from Figure 5.4 that more than three quarters of the respondents (78%) did not prefer this method; keeping in mind that they might still use this method although they do not prefer it. The chart also shows that around 12% of the respondents prefer to use a service office and only 9% were neutral or did not know. The Likert score was 4.19, indicating that authorising a third party (service offices) to access and complete government services and transactions is not the preferred method, and reducing its availability will be likely to encourage individuals to adopt and utilise e-Government systems.

The composite score of the *Socio-Cultural* factor is 1.8, which can be interpreted as indicating that *SC* is an influential factor. It is likely that it has a positive influence on the adoption and utilisation of the citizens in terms of using e-Government services. Based on the proposed interpretation guide of the results (see Table 4.5 in Chapter 4), the *SC* composite score of 1.8 is very close to the upper level of influence that ranges between 0 and 1.79; and is a 'very influential' factor The result of the *SC* factor has been tested utilising the standardised values (Z score) procedure (see Section 4.4.1 in Chapter 4) to detect any outliers and there were no cases out of the proper range (-/+ 3.29).

Awareness (AW)

Awareness (AW) is another factor that belongs to the Motivational group of factors (MF) in the research model EGAUM. In the sample of public users (citizens), *AW* was measured with two groups of items each of which used a different scale. The first group (*AW* part1) was measured with a 5-point Likert scale ranging from "Strongly agree" to "Strongly disagree" and it includes 4 items. The second group (*AW* part2) was measured with a 5-point Likert scale that relates to the influential levels of different advertising methods. This scale ranges from "Very influential" to "Very uninfluential". Table 5.5 shows the measured items involved in the two groups, and more details about measuring AW will be discussed in the two sections following.

Table 5.5: The AW factor measured from the citizens' perspective

Constructs	Item code	Measure
Awareness	**AW part1**	
	AW1	I feel that I have a good knowledge about EGOV benefits, features and services.
	AW2	I think that it is easy to know whether the intended government service is available online or not.
	AW3	Offering workshops and visual presentations about EGOV would encourage me to attend and know more.
	AW4	I am satisfied with the current awareness campaigns and advertising about EGOV in Saudi Arabia.
	AW part2	The influence degree of several advertising methods on the willingness to use EGOV:
	AW5	• Advertisements on social media
	AW6	• Advertisements on government agencies' websites
	AW7	• Advertisements in newspaper and magazines
	AW8	• Advertisements on TV and radio channels
	AW9	• Advertisements in public areas
	AW10	• Advertisements through emails and text messages

AW part1

The first part of measuring the *AW* factor concerns the influence of several awareness aspects on the citizens' adoption and utilisation of e-Government systems and services. Figure 5.5 below presents the results of all involved items:

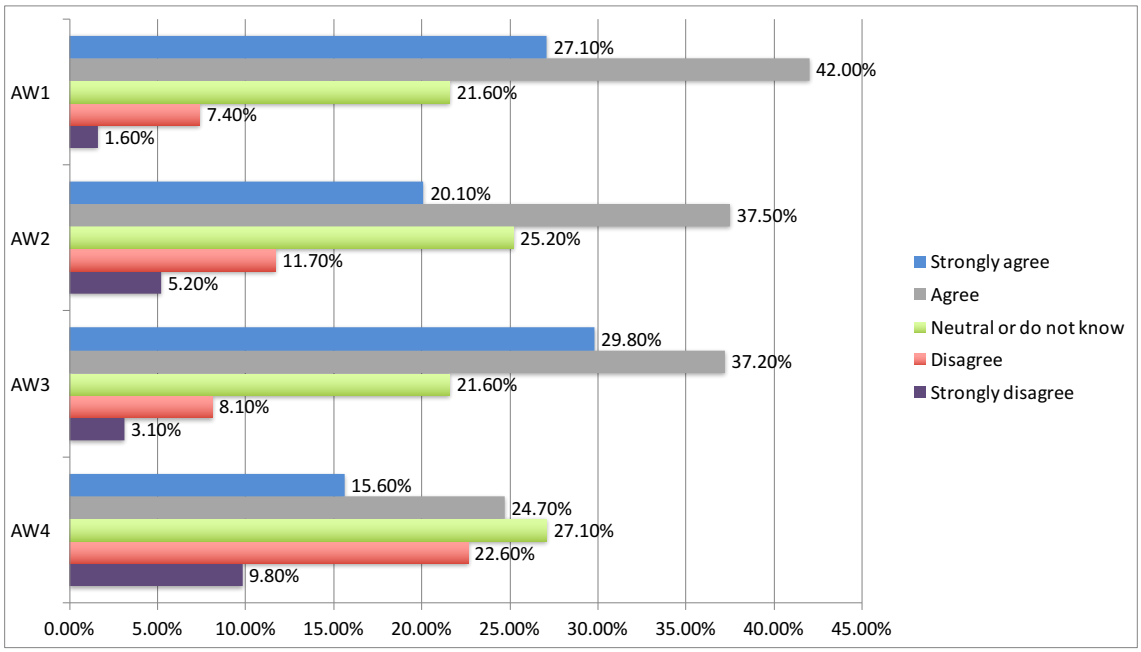


Figure 5.5: The results of AW part1 measurement items (citizens)

The first item (AW1) asks participants whether they feel that they have a good knowledge about the benefits, features and e-Services provided by e-Government. In other words, this item measures the satisfaction of participants with their awareness of what e-Government systems can offer them. Figure 5.5 shows that around 69% of the respondents feel their knowledge and awareness about e-Government benefits and services to be good or satisfactory. Approximately 21% of the respondents were neutral and 9% of them did not feel that their knowledge about e-Government potential was good enough. The Likert score of this item was 2.14 showing an overall satisfaction with the knowledge that the respondents had about the benefits, features and services of e-Government systems.

Item AW2 relates to whether respondents consider it easy to know if the transactions and services required are provided online. Its results show that over half the surveyed participants (57%) consider it easy to find out whether the intended government service is available online or not, although 17% disagreed with that. A quarter of the respondents (25%) indicated neutral or did not know (see Figure 5.5). The percentages of participants who disagreed with the statement or showed their neutrality are worth considering when implementing e-Services. The awareness of what e-Services are provided online through e-Government systems is very important; and arguably even more important than knowing the details of the provided e-Services such as the requirements and procedures. This aspect of awareness is a significant first step to encourage and increase adoption and utilisation. Although the total Likert score of this item (2.44) shows an overall agreement about the ability to know which e-Services are provided, more attention needs to be given to increasing awareness of the current and new e-Government services.

Offering workshops, conferences, visual presentations and advertising campaigns are crucial when it comes to increasing awareness of e-Government services and potential. Thus, measuring the influence of such methods of creating and increasing awareness on the adoption and usage level is an important part of this study. The respondents were asked in item AW3 to respond to the statement “Offering workshops and visual presentations about e-Government would encourage me to attend and know more”. Figure 5.5 shows that 67% of the respondents agreed, around 21% were neutral and 11% disagreed with the statement. The total score of item AW3 was 2.17, and this overall result indicates that the awareness methods proposed in the statement such as workshops and advertising campaigns are likely to encourage individuals to adopt and use e-Government systems.

Moreover, in item AW4, the respondents were asked to indicate their satisfaction with the current awareness campaigns and advertising about the Saudi e-Government services. It is clear from Figure 5.5 that the group of participants who responded with “Do not know or neutral”

answer is relatively large (27%). Furthermore, the percentage of respondents not satisfied with the current awareness campaigns and advertisings was also high (32%). This indicates that the awareness of the Saudi e-Government services and benefits is below the expected level. The overall Likert score of this item (2.8) reveals an unsatisfactory level of satisfaction with current awareness campaigns and advertising.

The composite score (2.4) of the first part (*AW* part1) of measuring the influence of the *Awareness* factor means that there is general agreement that awareness is likely to influence the users' adoption and utilisation level. The composite score has been investigated to detect possible outlier cases using the standardized values test (Z score), and there were no outliers in the data.

AW part2

The second part of the *Awareness* factor (*AW* part2) was concerned with measuring the influence of several advertising methods on the participants' willingness to use e-Government services. Advertising methods are considered to be important influential factors on citizens' awareness, and therefore influence their adoption and utilisation. The respondents were asked to assess the degree influence of different advertising methods on their willingness to use e-Government services. Six major advertising methods were proposed, including ads on social media, ads on newspaper, ads on TV channels and ads though SMS messages and the results of their assessed influence are presented in Figure 5.6 below:

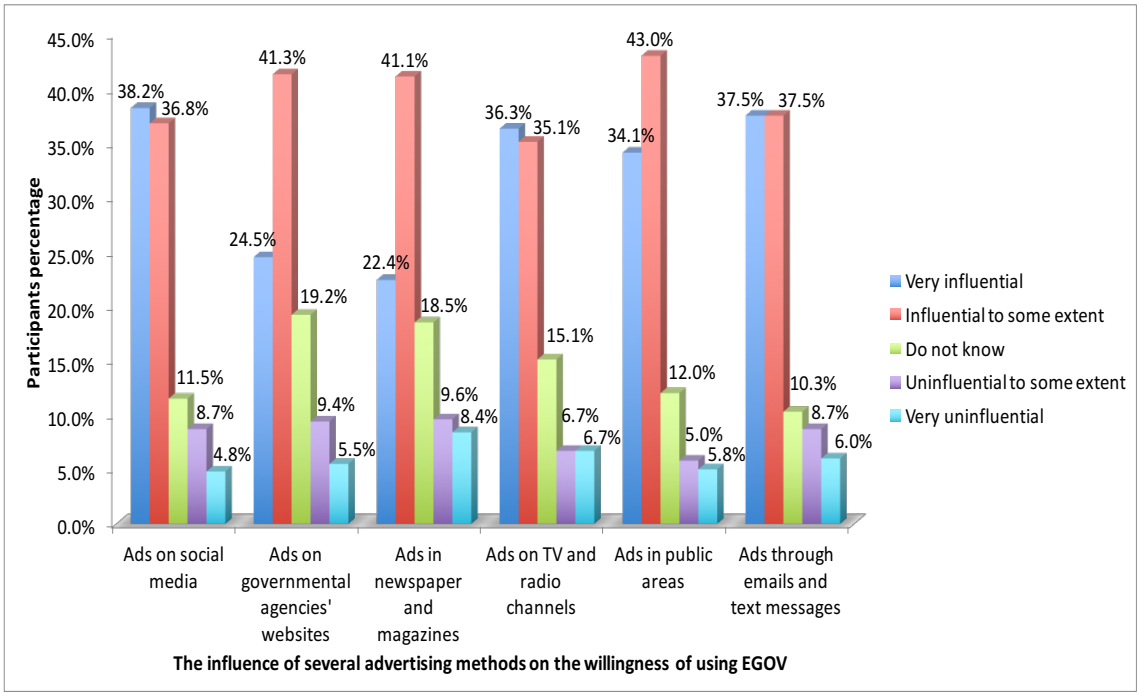


Figure 5.6: The result of AW part2 measurement items (citizens) (see appendix G for larger graph).

It is clear from Figure 5.6 that social media, TV & radio, billboards in public areas and e-Messages were considered the most influential media to affect citizens' adoption and intention to use e-Government services. Approximately 38% of the respondents rated social media as a very influential method. Saudi Arabia is one of the largest social media markets in the Middle East; and more than 40% of all active Twitter users in the Arab region are from Saudi Arabia. Moreover, Saudi Arabia has the highest per-capita YouTube use of any country in the world (BBC, 2015). This high use of social media in Saudi Arabia may explain why many participants see it as influential.

The amount of time that most individuals spend in their cars can increase the impact of the radio channels on drivers and their companions. Since there is no efficient public transportation in Saudi Arabia, individuals rely mainly on cars for their transportation. This causes the frequently overcrowded roads and increases the time spent in vehicles. Thus, it is likely that the media that can reach individuals while they are driving such as radio channels and billboards would have a strong impact on them and these can be exploited to increase the individuals' awareness. The results show that advertisements on TV and radio channels were reported as very influential by 36% of the respondents. Furthermore, 34% of the respondents categorized advertisements in public areas such as billboards (hoardings) as a very influential on their willingness to use e-Services.

Moreover, the use of mobile phones in Saudi Arabia is growing considerably and this creates a very powerful method of increasing awareness of users through SMS text messages and emails. A report published by the Communications and Information Technology Commission in Saudi Arabia revealed that the total number of mobile subscriptions was around 51 million by the end of 2015 (Saudi Communication and Information Technology Commission, n.d.). This means that mobile subscriptions outnumber the Saudi population by almost 24 million (the Saudi population is about 27 million) (CIA, 2016). This may explain why e-Messages including SMS messages and emails were reported by almost 37% of the respondents as a very influential advertising method.

It is also clear from Figure 5.6 that convergent proportions of the respondents categorized almost all the proposed advertising methods as influential to some extent; with advertising in newspaper and magazines being seen as less influential. This is possibly because of the current trend to rely on electronic websites and applications instead of reading printed newspapers and magazines. The results show that 18% of the respondents rated advertisements in newspapers and magazines as an uninfluential method (ranging from "Uninfluential to some extent" to "Very uninfluential").

The composite score of *AW* part2 was 2.1 and this can be interpreted as meaning that the proposed advertising methods are influential on the respondents' adoption and usage of e-Government services to some extent. This indicates that the various advertising methods have a positive impact on the citizens' intention to use; as such advertisements positively affect their awareness. The result of *AW* part2 was tested for outliers, using the standardized score (Z score) procedure and no outliers were detected.

Functional Quality of Service (FQS)

The *FQS* factor was also measured with two groups of items, namely, *FQS* part1 and *FQS* part2. The first group comprises three items which measure the influence of the quality of several functional aspects related to e-Government services. A 5-point Likert scale ranging from "Strongly agree" to "Strongly disagree" was used in measuring the first part. The second group comprises four items that measure the degree of importance of providing functional activities that are related to the quality of e-Government services and systems. The degree of importance of the proposed items reflects their influence. All measuring items are presented in Table 5.6 below:

Table 5.6: The FQS factor measured from the citizens' perspective

Constructs	Item code	Measure
Functional Quality of Services/System	**FQS part1**	
	FQS1	I feel that the current EGOV in Saudi Arabia is of high quality.
	FQS2	I think that the current Saudi post mail services are fast and reliable to deliver the required documents when using EGOV.
	FQS3	I think paying for EGOV services and transactions with the SADAD system is efficient and enough.
	FQS part2	The degree of importance of providing several functional aspects related to the quality of services:
	FQS4	• Tracking the status of the performed e-Transactions online
	FQS5	• Viewing the history of the preformed e-Transactions online
	FQS6	• Evaluating and rating the quality of the provided e-Services
	FQS7	• Communicating with me regarding the status of my e-Transactions (SMS or email)

FQS part1

As stated earlier, this part involved three measuring items. Figure 5.7 below presents the results of the first part:

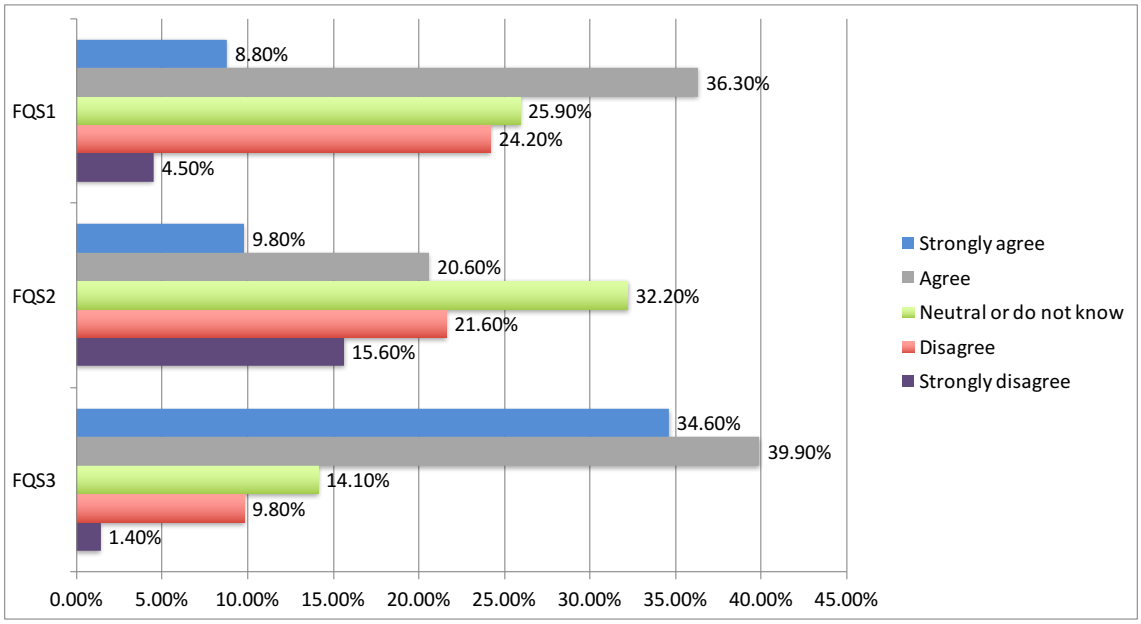


Figure 5.7: The results of FQS part1 measurement items (citizens)

In FQS1, the respondents were asked whether they feel that the current e-Government services in Saudi Arabia are of high quality. Figure 5.7 shows that 45% of the respondents agreed that the currently provided e-Services are of high quality while 28% disagreed. Around 25% of the respondents were neutral in their answers or they did not know. The Likert score of this item was 2.79, suggesting that the percentages of neutral and disagree answers were relatively high and thus, they need to be investigated further. It is likely that the participants who did not agree with the statement either have not used the e-Government systems in Saudi Arabia or they have used them but they were not satisfied with them.

The results were investigated further using a cross-tabulation procedure and the results revealed that 68% of the respondents who have not used e-Government services before did not agree with the statement or were neutral. Therefore, this proportion of participants possibly thought that they could not judge the current government e-Services to be of high quality. It is also possible that they feel that such e-Services are not of high quality, even if they have not used them due to previous face-to-face dealings with government agencies. Moreover, the investigation also revealed that almost 71% of the female participants did not agree or were neutral with the statement. This is possibly because their legal guardian (husband, father or brother) complete many government transactions using e-Government systems on their behalf. So it is likely that they could not judge the e-Services to be of high quality.

For those who have used e-Government services in Saudi Arabia, their responses to this item were investigated by considering their previous experience of using such electronic services. Utilising the cross-tabulation procedure, approximately 64% of the respondents who responded with a 'neutral' or 'do not know' answer to the FQS1 statement were not fully satisfied with their previous experience of using e-Government systems. Furthermore, more than three quarters of the respondents (80%) who disagreed with the FQS1 statement were also not fully satisfied with their previous experience of using e-Government services. Overall, the results investigation showed that unsatisfactory previous experience negatively influences the users' perception about the quality of e-Government systems.

The correspondence between agencies and customers is one of the functional aspects related to the quality of e-Government services. Thus, the respondents were asked in item FQS2 to indicate their view regarding the statement "I think that the Saudi post mail services are fast and reliable to deliver the required documents when using e-Government". As shown in Figure 5.7, around 30% of the respondents agreed (from "Strongly agree" to "Agree"), while 37% disagreed (from "Strongly disagree" to "Disagree") and 32% gave neutral responses. A Likert score of 3.12 suggests that respondents are not convinced that the Saudi post mail services are fast and reliable when using them to deliver the required documents. Generally, the Saudi postal services have not been much used in Saudi Arabia until recently. Some postal services have been recently introduced in association with some government organisations in order to use them for document delivery. For example, some public universities, which are considered government organisations, require applicants to send their original certificates and transcripts to the admissions departments using the Saudi postal services. However, the Saudi postal services are still limited and therefore, the majority of the respondents were uncertain about the speed and reliability of the post mail services, as they may not have used them before.

In relation to item FQS3, (see Figure 5.7) three quarters of the respondents (75%) agreed that paying for e-Government services and transactions with the SADAD payment system is efficient and enough. Only 11% of them disagreed and 14% were neutral or did not know. A Likert score of 2.03 was obtained, suggesting that the respondents generally thought that the SADAD option is efficient and enough for them to use it for e-Government transactions' payments. Although SADAD is a limited payment system for online payment, as it mediates between the payer and the payee and it is not a direct payment system, the overall agreement on its efficiency and sufficiency was relatively high. This is possibly because online payment has only been introduced and implemented in Saudi Arabia in recent years and the majority of users do not know about other options for online payment that exist in developed countries.

The composite score of *FQS* part1 was 2.65 and this indicates an overall neutrality or uncertainty as to the influence of the first part of the *Functional Quality of Service/System*. The composite score is affected by the result of items FQS1 and FQS2 as the majority of the participants did not agree about the high quality of the current e-Government services and they also were uncertain about the reliability and speed of the Saudi postal services when using them for e-Government transactions and services. Although the composite score of this part did not sufficiently indicate the influence of *FQS* factor on the adoption and utilisation, the second part may provide better evidence of the influence of this factor. Moreover, the statistical analysis of this factor in Section 5.4 also provides a clearer indication of the influence of *FQS* factor. The *FQS* data has been investigated to detect potential outliers using the standardized values (Z score) and no outlier cases have been detected.

FQS part2

As mentioned earlier in this section, this part was measured with a 5-point Likert scale that concerns with the degree of importance of providing several functional aspects related to the quality of e-Services. Four functional aspects were selected for respondents to allocate a degree of importance when using e-Government systems, and they represent the items used in this part. The aspects proposed are associated with the quality of the online transactions and services provided through e-Government systems. Figure 5.8 presents the results for *FQS part2*:

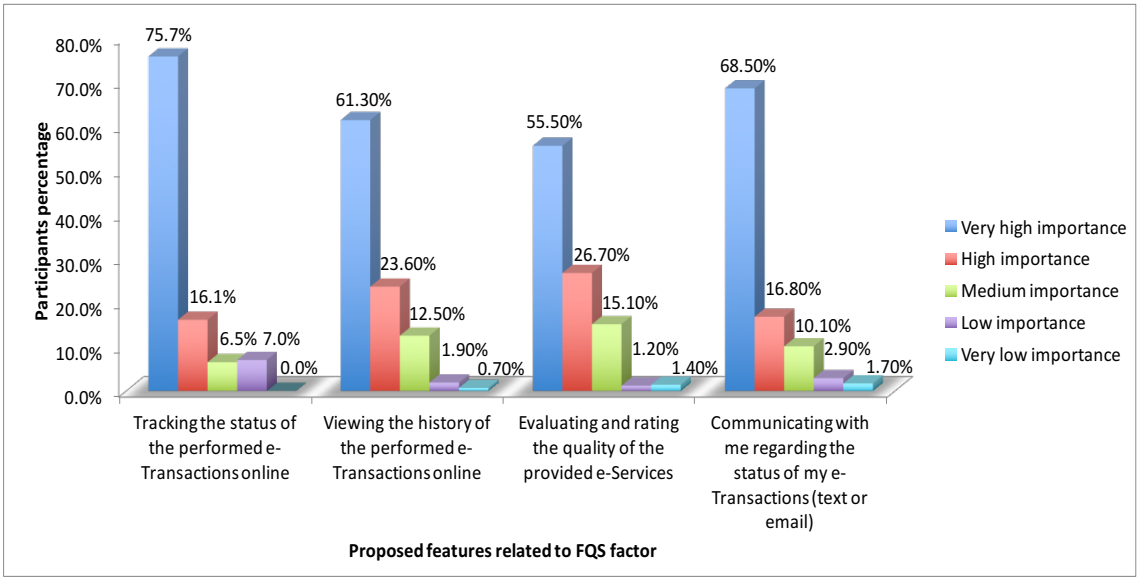


Figure 5.8: The results of FQS part2 measurement items (citizens) (see appendix G for larger graph).

It is clear from Figure 5.8 that the degree of importance of the selected functional aspects was very high for the majority of the respondents. The first bar chart on the left shows that three quarters of the respondents (75%) believed that tracking the status of e-Transactions online is of very high importance. It is likely that such feature would save customers a lot of time and effort

that they usually spend when they visit government agencies to chase up their government transactions. Around 16% of the participants reported it was of high importance and 6% attributed medium importance to this feature. Only 7% of the respondents thought that this feature was of low importance. Moreover, the second bar chart on the left shows that a large majority of the respondents (84%) believed that viewing their government transactions was highly important to them. With this functional feature, customers can have better control over their government transactions; as it can help them avoid penalties that might be applied if the required transaction is delayed. Around 12% of the participants thought that this functional feature was of medium importance and only 2% reported it as of low and very low importance.

The second bar chart on the right shows that the ability to evaluate and rate the quality of the provided e-Services is of high importance for the vast majority of the respondents (82%). Although evaluating and giving feedback on services is a relatively new cultural phenomenon in Saudi Arabia, especially in the public sector, the majority believed that evaluation and appraisal of the quality of the provided e-Government services would help to improve such e-Services. 15% of respondents gave this a medium degree of importance, and just below 3% of the respondents gave a low and very low degree importance to this functional feature. Furthermore, the first bar chart on the right shows that communicating with the customers regarding the status of their e-Transactions is highly important to the majority of the respondents (85%). Around 10% of them gave this a medium degree of importance and 4% only a low or very low degree of importance. This result is probably because the users need to be updated about the status of their online transactions, and it would give them peace of mind to receive updated information and also any confirmation related to their government transactions. Reminders about the required transactions and the expiry dates of some transactions/documents are also a form of this type of communication.

A composite score of 1.52 was obtained for this part which indicates an overall agreement that the proposed functional features have a very high degree of importance. It is very likely that implementing these functional features would positively influence the adoption and usage level of e-Government services. Providing these functional features reflects a high quality of e-Government implementation and therefore, the adoption and utilisation will be high and contribute to the overall success of e-Government. In terms of the detection of outliers, 4 cases were detected and the composite score was recalculated after these outliers were omitted to assess the impact of the detected outliers. The new composite score was 1.49 which was very similar to the previous composite score. Therefore, the outlier cases will not be removed at this stage, as they do not have significant impact on the overall result.

Previous Experience (PE)

The influence of the *Previous Experience* factor in the sample of citizens was measured with four Likert-type items with different scales that depended on the nature of the question. Therefore, the median and inter-quartile range will be used in the descriptive analysis (Claso & Dormody, 1994). The answer options for this factor's items were narrowed to three, because the researcher wanted to gain more accurate results for these kinds of question. Rating the previous experience of using online services and determining their impact with many answer options could distract the participants and possibly affect their answers, which would influence the result for this factor. There was no neutral option in this factor's items and this may be considered to be a type of bias. However, as long as a participant has used online services, then it is important to the study to gain more accurate answers about their rating of the e-Services used; and also about how this use would affect future use. The participants skip these questions if they have not used such e-Services. In other words, the answers to this factor's questions were dependent on other questions that participants were previously asked. Table 5.7 presents the four items involved in measuring the influence of previous experience.

Table 5.7: The PE factor measured from the citizens' perspective

Constructs	Item code	Measure
Previous Experience	PE1	How do you rate your experience of using EGOV in general?
	PE2	How will previous experience of using EGOV affect your future use?
	PE3	How do you rate your experience of using non-government online services in general?
	PE4	How will previous experience of performing non-government online services affect your willingness to use EGOV?

The first two items (PE1 and PE2) measured the influence of Previous Experience of using e-Government systems and services; whereas items PE3 and PE4 measured the influence of Previous Experience of using non-government online services, such as online banking and online shopping. Moreover, the responses to these items will contain missing data, as they are dependent items. For example, item PE1 asked the respondents to rate their previous experience of using e-Government systems and only the participants who has used the e-Government systems would answer this item. So the items here are dependent on prior items.

In item PE1, the respondents were asked to rate their previous experience of using e-Government systems and in item PE3, they were asked to rate their previous experience of using non-government online services. Figure 5.9 below shows the results of the participants' rating of these two kinds of online service:

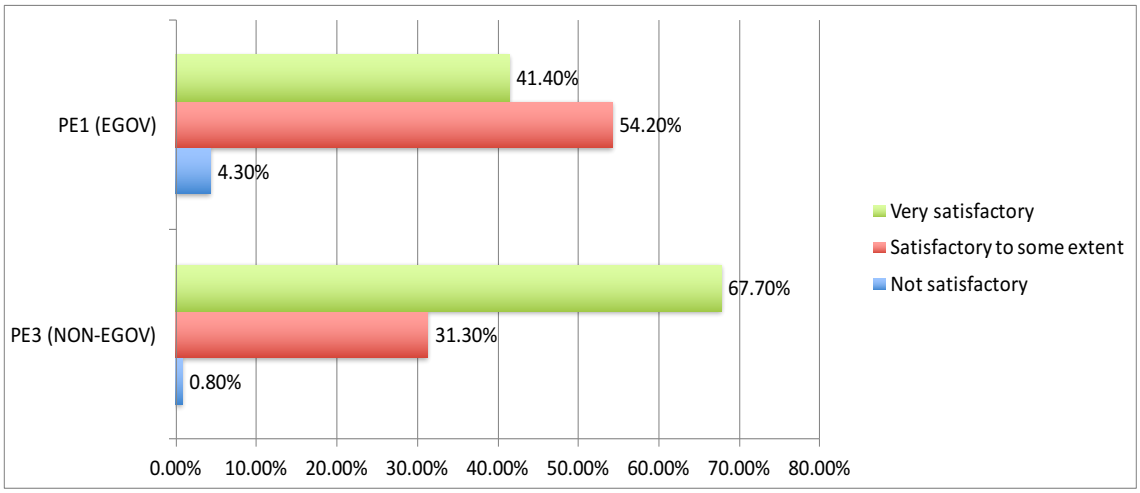


Figure 5.9: The results of items PE1 and PE3 (citizens)

Figure 5.9 shows that 41% of participants were very satisfied with their previous experience of using e-Government, 54% were satisfied to some extent and only 4% were not satisfied at all. The median value of this item is *Md*=2 and this means that the majority were not very satisfied with their previous use of Saudi e-Government systems. The reasons for this dissatisfaction were also collected. Figure 5.10 below shows several possible reasons that made participants dissatisfied. More reasons were also reported by the participants and these will be presented and discussed in the subsequent paragraphs.

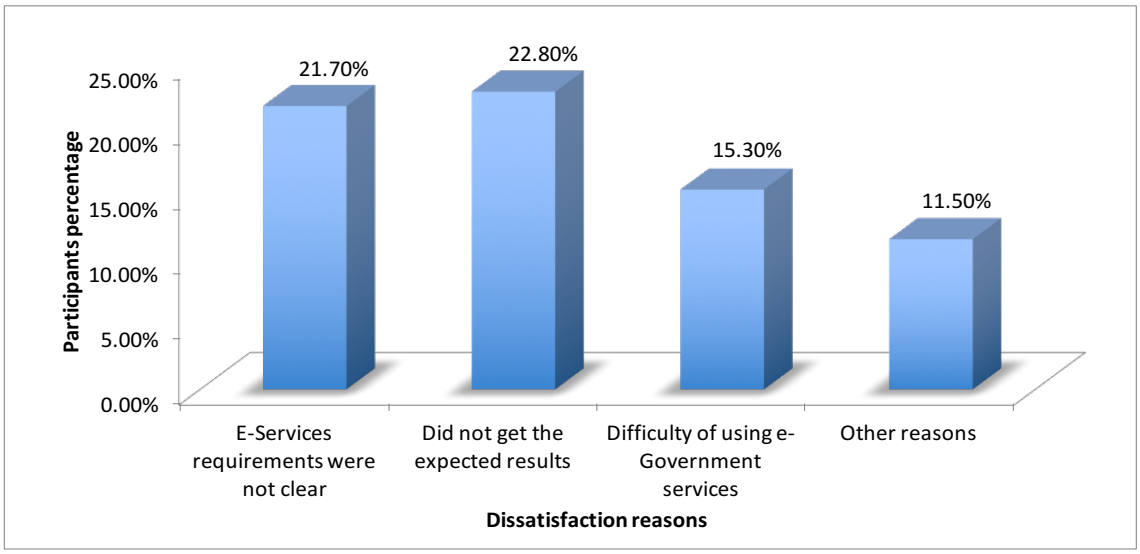


Figure 5.10: Dissatisfaction reasons of the e-Government use (citizens' sample)

Figure 5.10 shows that around 21% of the respondents who have used the Saudi e-Government systems and were not fully satisfied with them reported that the requirements of the intended e-Services were not clear. This issue exists even with the traditional ways of performing government transactions; thus many citizens turn to the unauthorized service offices that usually exist in front of most of the government agencies to ask them for recent updates about the

documents required for their transactions. This issue is even worse if it persists in online services, as customers would not be able to obtain helpful information about the requirements.

Moreover, 22% of the respondents who were not fully satisfied reported that they did not get the results expected. This includes the inability to conduct transactions and obtain the required outcome completely online. Several e-Services have been introduced in Saudi Arabia but customers still need to visit the e-Service provider to complete most transactions. Furthermore, this proportion of participants might have faced technical issues while using e-Government services, so they were not able to perform their e-Transactions. Additionally, about 15% of the dissatisfied respondents faced difficulties when using online services. These difficulties could include the complexity of filling the e-Services applications, difficulty with finding the intended e-Services on the provider's website, slow Internet connection and slow server response; also using incomprehensible terms and sentences make use more difficult for many users. Moreover, some e-Services require uploading certain documents online, if the required file size was unreasonable or limited, this also would cause difficulty for many users.

Other reasons for dissatisfaction were also reported by the participants. For example, a number of them stated that a large number of these online services required visiting the intended agencies to complete them. In other words, part of the provided e-Service is electronic where customers can do it online and the other part is still paper-based where customers need to visit the government agency in person to complete it. This would not achieve the main goal of implementing e-Government systems which is the complete transformation of public services and transactions. Some other respondents stated that most of the e-Government services are not integrated. This means that there is no communication and coordination between different government agencies in cases where the e-Service requires to be processed by more than one agency. Several respondents also reported issues in the infrastructure of the Internet and e-Government systems in Saudi Arabia. They stated that the infrastructure does not match up to the expectations and aspirations of the target customers. Lack of awareness about the benefits and potential that can be gained from the e-Government systems and services was also reported. Some respondents complained about issues related to data privacy and data protection in electronic services and transactions. Lack of help and support from e-Services providers was also reported; and lack of efficient postal services that can boost the success of e-Government implementation was another reported complaint.

All the previous stated constraints and challenges will definitely have a negative impact on the adoption and utilisation of e-Government systems. The influence of most of them, if not all, has been addressed in the current research, since one of the main objectives of this research is to analyse their impact in order to promote the successful implementation of electronic

government systems in Saudi Arabia. Most of the reported challenges and issues, which influence users' adoption and usage, were included in the research instrument items. This supports the innovation of the research as it aims to identify the needs and aspirations of the targeted users and strengthens the claim that the research instrument was designed for the actual situation of e-Government in Saudi Arabia.

With regard to item PE3, the researcher looked at previous experience from a different angle; which is the use of non-government online services, such as online banking and online shopping. Therefore, the respondents were asked to rate their previous experience of using such online services. Figure 5.9 shows that approximately 67% of the participants were very satisfied, 31% stated that these services were satisfactory to some extent and just under 1% that they was not satisfactory. The median value of this item is *Md*= 1 which indicates that the majority was happy and satisfied with their previous use of online non-government services.

Items PE2 and PE4 concerned the impact of the previous online use of e-Government services and non-government services respectively. The results of both items are presented in Figure 5.11 below:

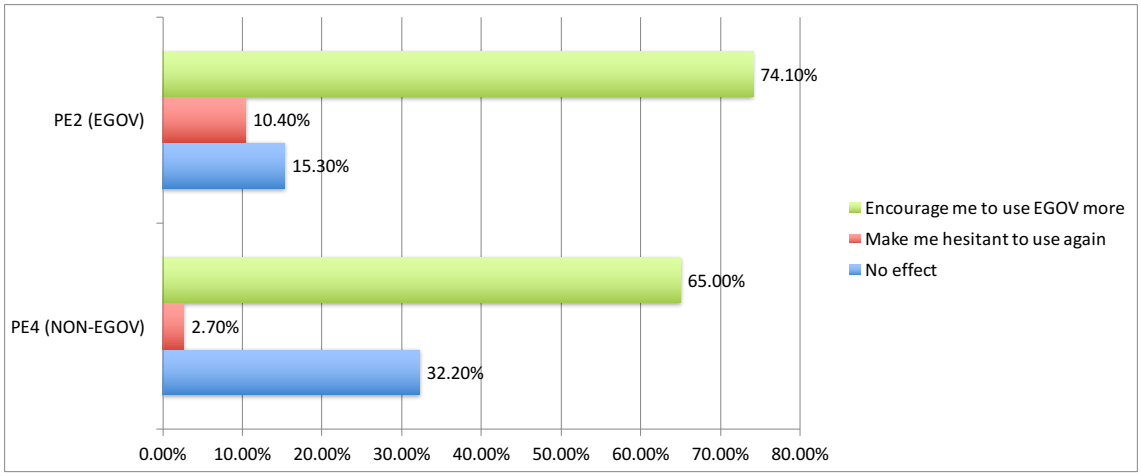


Figure 5.11.: The results of items PE2 and PE4 (citizens)

In item PE2, the respondents were asked how their previous experience of using e-Government services would affect their future use. It is clear from Figure 5.11 that almost three quarters of the participants (74%) stated that their previous experience would encourage them to use such e-Services. This does not mean that those participants were fully satisfied with their previous use, as shown in the result of item PE1. This group of encouraged respondents is very likely to include both satisfied participants and also the participants who really need such e-Services even if the latter do not fully meet their needs. The ability to conduct government transactions and access services online is a strongly encouraging factor that may make most citizens use e-Government services, even if these are limited and unsatisfactory. Moreover, the figure shows

that 10% of the respondents are hesitant about using such government e-Services again. It also shows that previous use would not affect the future use for 15% of the participants. Generally though, the median value of this item (*Md*= 1) indicates that it is very likely that the previous experiences of using e-Government would have an influence on future use.

In item PE4, the participants were asked whether their previous experience of using non-government online services would affect their future use of e-Government services. Figure 5.11 shows that such experience would encourage 65% of the respondents to use e-Government services; thus it is likely that those participants gained what they needed from using the online services, and this experience contributed to their positive perceptions about other online services, like e-Government services. However, the previous use of non-government online services made 32% of the respondents hesitant to use e-Government services; and it is likely that those participants faced problems and difficulties while using the online services, and they may feel that such negative effects would also exist with the other online services, including e-Government services. Only 2% of the respondents stated that previous experiences of such online services would have no effect on their future use of e-Government. The median value of *Md*=1 indicates that the previous experience of using online services (other than e-Government services) also has an influence on the future use of e-Government services.

Perceived Simplicity (PS)

PS is another factor that was measured with two groups of items to provide more accurate and objective results. The first group (*PS* part1) used a 5-point Likert scale ranging from "Strongly agree" to "Strongly disagree" and it comprised three items. The second part (*PS* part2) used a 5-point importance scale ranging from "Very high importance" to "Very low importance" and it also comprised three items. Table 5.8 shows the measuring items used in the *PS* factor and these will be discussed in the following sections.

Table 5.8: The PS factor measured from the citizens' perspective

Constructs	Item code	Measure
Perceived Simplicity	**PS part1**	
	PS1	I think the EGOV services are easy to use.
	PS2	I think that using EGOV services requires a lot of concentration and effort.
	PS3	I believe that EGOV will make performing the government transactions easier than traditional ways.
	PS part2	The importance degree of providing several aspects and features that are related to the simplicity:
	PS4	• Detailed steps on how to perform e-Services.
	PS5	• Text/image examples of the requirements.
	PS6	• Explanation on how e-Transactions will be processed.

PS part1

This part was concerned with the users' perceptions about the simplicity of using e-Government systems. It measured how they perceive their ease of use and how that would influence their adoption and intention to use. Figure 5.12 below presents the results for *PS* part1:

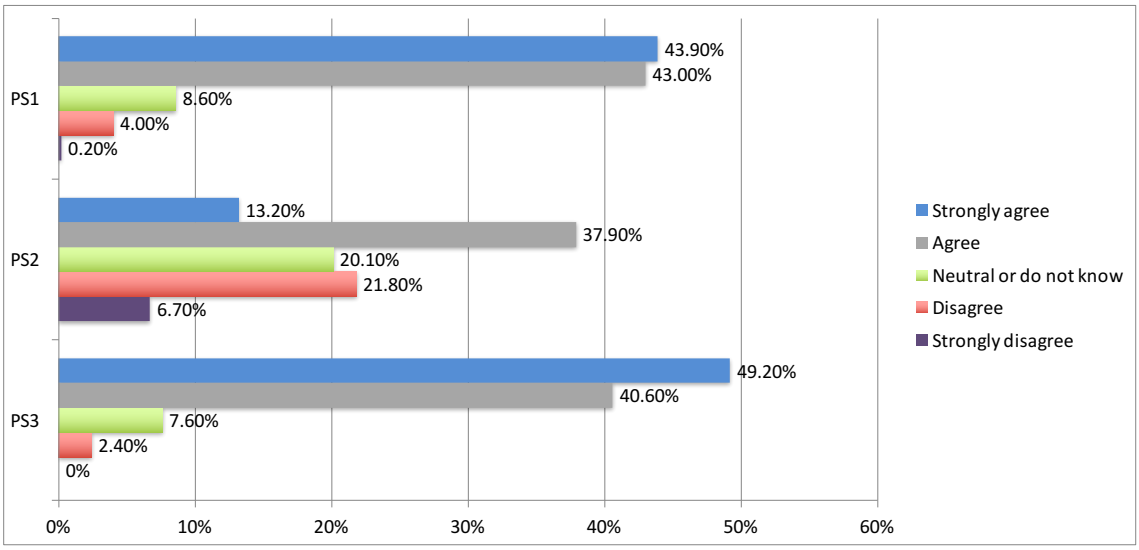


Figure 5.12: The results of PS part1 measurement items (citizens)

Figure 5.12 shows that the vast majority of the respondents (87%) perceived that e-Government services are easy to use (item PS1); around 8% were neutral or did not know and only 4% of them did not agree that such e-Services are easy to use. The total Likert score was 1.73 indicating a very good overall level of perceived simplicity.

Responses to item PS2 that stated "I think that using e-Government requires a lot of concentration and effort" indicated that more than half of the respondents (51%) agreed ("Strongly agree" and "Agree") whilst 28% disagreed ("Disagree" and "Strongly disagree") with the above statement (see Figure 5.12). Moreover, 20% of the participants responded with a "Neutral or do not know" answer. The majority believed that using the Saudi government e-Services actually needs a lot of concentration and effort, probably because they do not want their e-Transactions being rejected. However, the obtained Likert score for this item was 2.70, which means neutrality or uncertainty for the overall result. The total score was influenced by the relatively high percentage of "Neutral" and "Disagree" responses; which are there possibly because there are not many advanced and sophisticated e-Services that require large amounts or complex data. For example, accessing the traffic penalties e-Service, which is one of the most common online services in Saudi, only requires a national ID number. This e-Service would definitely not take more than a few seconds to complete, while if it required more information such as date of birth, driving license and address, then it would require more concentration on the part of the user.

Figure 5.12 also presents the result of item PS3 which asked the respondents whether they believe that e-Government systems would make performing government transactions easier than traditional ways. The overwhelming majority of the participants (89%) agreed that they would, only 7% were neutral and 2% disagreed. The Likert score for PS3 was 1.63 indicating a high perceived simplicity for using e-Government services compared to the traditional ways.

The composite score of this part was 2.02 suggesting that *Perceived Simplicity* is likely to influence the users' adoption and utilisation. The result of this part is interpreted, based on the proposed guide, as meaning that *PS* is an influential factor. The composite score was tested against outlier cases and there were 3 detected cases. After omitting the outliers, the composite score was recalculated and the result was 2.01, which is almost identical, therefore, the outliers will be retained at this stage of analysis.

PS part2

The second part (*PS* part2) was concerned with exploring the importance of providing several simplicity aspects. The importance of the proposed aspects will contribute to measuring the influence of simplicity on intention to use. The simplicity aspects were proposed as information that can make use easier and simpler. Figure 5.13 below shows the proposed aspects of simplicity (3 items) alongside the results:

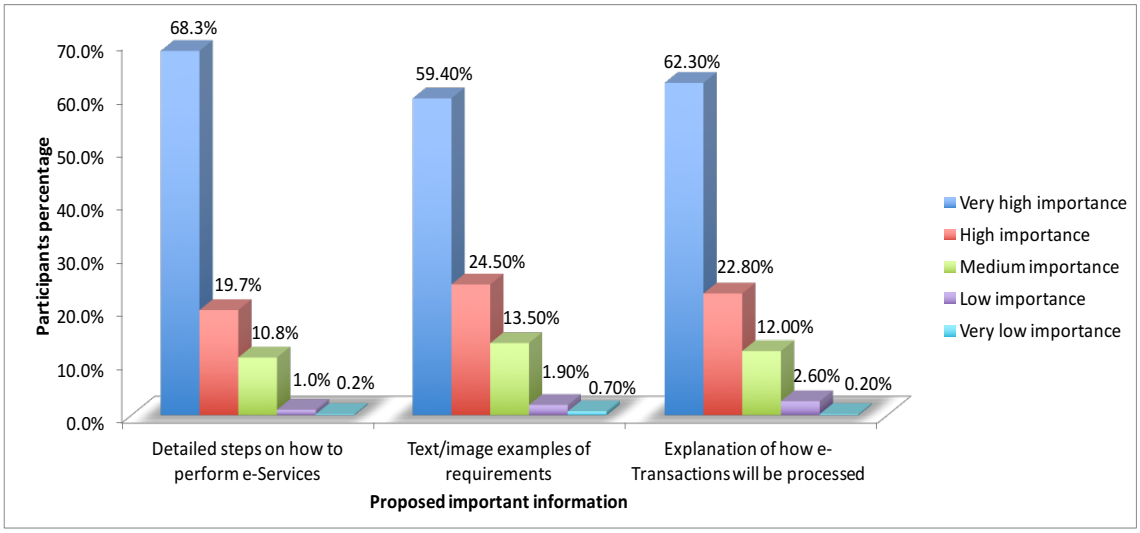


Figure 5.13: The result of PS part2 measurement items (citizens) (see appendix G for larger graph).

Between 83% and 88% of the participants stated that the proposed actions to boost simplicity were highly important to them ("Very high importance" and "High importance" respectively). Approximately 10% of the respondents attributed medium importance to all proposed simplicity strategies and between 1-2% gave them a low degree of importance ("Low importance" and "Very low importance"). The composite score for this part (1.53) can be interpreted as indicating that *PS* is a very influential factor. This means that providing information that makes

the use of e-Government services easier and simpler would significantly and positively influence the users' adoption and intention to use. There were 2 outlier cases detected in this part's data and the recalculated composite score was 1.52, indicating no effect from the detected outliers.

Technical Quality of Service (TQS)

TQS was also measured with two groups of items, each of which has a different measurement scale. *TQS* part1 comprised 2 items, and a 5-point Likert scale was utilised in this part. The second part (*TQS* part2) used a 5-point importance degree scale and it comprised 4 items. The measured items are listed in Table 5.9 and the descriptive analysis will be presented in the sections following the table.

Table 5.9: The TQS factor measured from the citizens' perspective

Constructs	Item code	Measure
Technical Quality of Services\System	**TQS part1**	
	TQS1	The existence of technical errors while using EGOV would reduce my willingness to use it for my transactions.
	TQS2	Bad layout and unattractive interfaces of EGOV websites would reduce my willingness to use its services.
	TQS part2	The importance degree of providing several technical aspects that are related to the quality of services:
	TQS3	• The expected time for e-Transactions processing
	TQS4	• The expected time you should take when performing e-Transactions
	TQS5	• The last update time of the e-Services websites
	TQS6	• The time of the last performed e-Transactions

TQS part1

This part measured the citizens' perception about the influence of two aspects that reflect the technical quality of the provided e-Services, namely, the existence of technical errors while using e-Government systems and the design of e-Government websites. Figure 5.14 below presents the results for the items involved in this part:

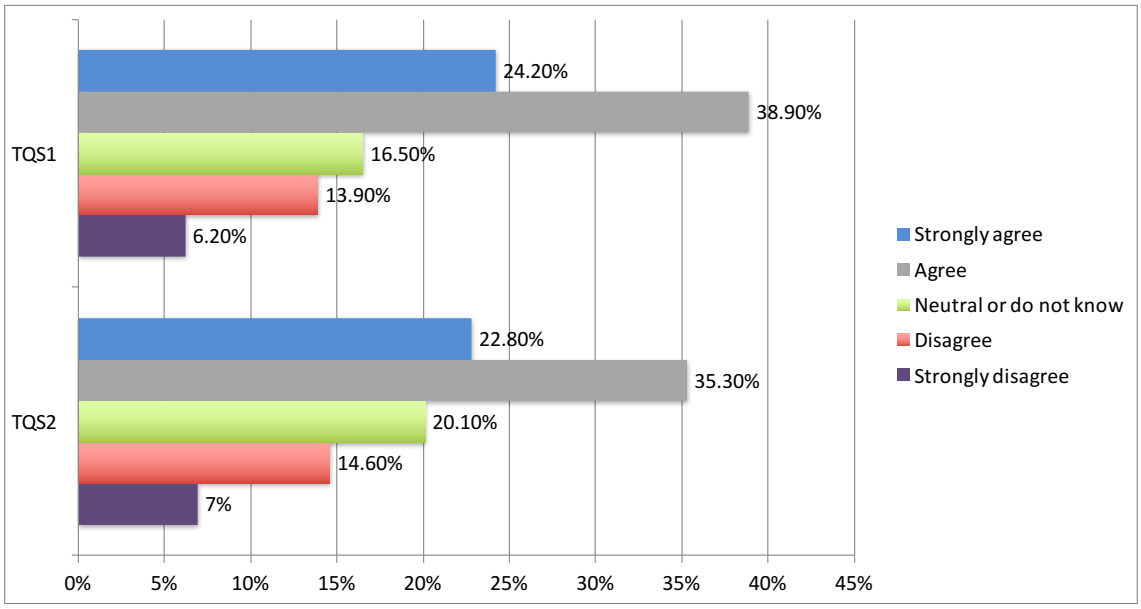


Figure 5.14: The results of TQS part1 measurement items (citizens)

In item TQS1, the respondents were asked whether the existence of technical errors while using e-Government systems would reduce their willingness to use them for their transactions. The technical errors here are meant as those on the e-Services providers' websites and include links not working, server errors and slow webpage response. Figure 5.14 shows that 63% of the respondents agreed (from "Strongly agree" to "Agree") whereas 20% disagreed (from "Disagree" to "Strongly disagree") that technical errors would make them less likely to use e-Services. The Likert score was 2.38 suggesting that most agree about the negative influence of technical issues and errors in the e-Government websites on the users' intention to use. Governmental e-Services websites must be free from such technical problems as they severely affect performance as well as the users' trust and willingness to use.

The layout and design of the government websites also play a vital role in the adoption and utilisation of e-Government. Thus, in item *TQS2*, the respondents were asked to indicate the influence of bad layout and unattractive interfaces on e-Government websites on their willingness to use its services. It is clear from Figure 5.14 that more than half of the respondents (58%) agreed that the bad layout and unattractive interfaces would reduce their intention to use while 21% disagreed with that. The Likert score of this item was 2.47 suggesting a negative influence of bad design in e-Government's websites on the users' intention to use the e-Services provide through these websites. The results indicate that extra care should be taken when designing e-Services websites and interfaces, as these are the mediators between the providers and customers.

The composite score of *TQS* part1 was 2.43 and this suggests that the existence of technical issues in the e-Government systems and the poor design of their websites would have a negative

influence on users' adoption and also would reduce their intention to use; thus technical quality of service would have an influence on the adoption and utilisation level. This part's data was tested and investigated and there were no outlier cases detected.

TQS part2

In this part, the respondents were asked to determine the degree of importance for certain extra informational services that reflect the technical quality of the e-Services provided; as it was felt that these would possibly affect users' perceptions about the quality of e-Services. Implementing such extra services on the e-Government websites is a technical matter, and at the same time providing them would let customers perceive the quality of the provided e-Services. Figure 5.15 below presents the proposed information that reflects the technical quality of the provided e-Services alongside the results:

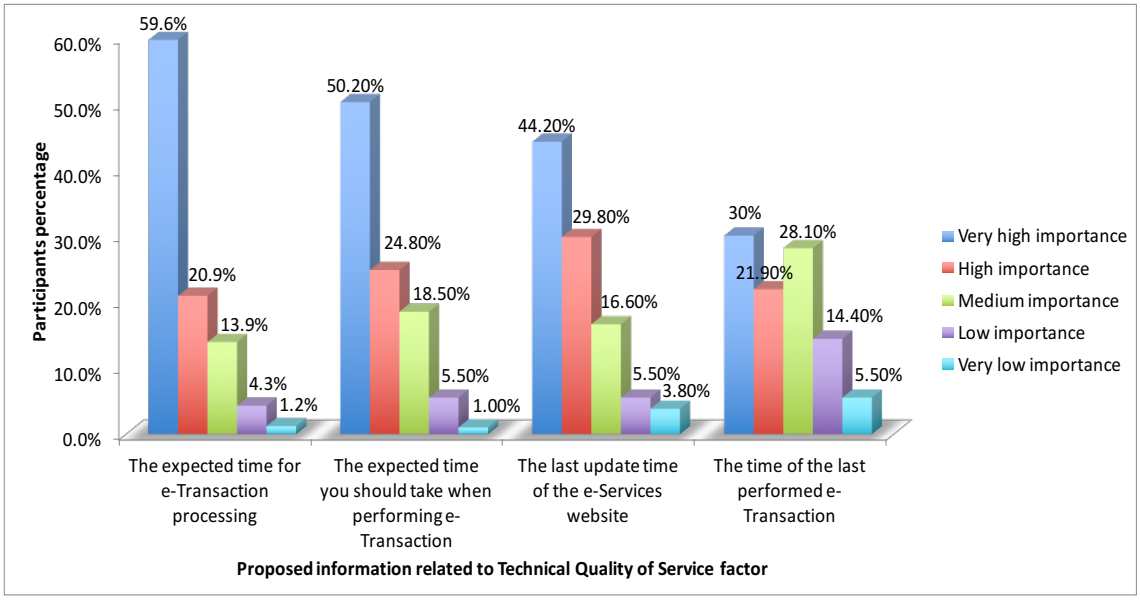


Figure 5.15: The results of TQS part2 measurement items (citizens) (see appendix G for larger graph).

It can be seen from Figure 5.15 that providing the expected time that an e-Transaction would take to be processed was of high importance to the vast majority of the respondents (80%). Around 13% of them gave it medium importance and only 5% gave it low importance. Providing such information would contribute to enhancing customers' perceptions about the quality of e-Services, as they will see the processing time that their e-Transactions should take. This also shows the transparency that should be present in e-Government systems, and would also contribute to the perceived quality. The expected time can be calculated from the workload and number of employees available and presented to the customer so they know when to expect the transaction to be completed. Moreover, providing the expected time that a customer should take for performing an e-Transaction was also highly important for three quarters of the respondents (75%), of medium importance for 18% and low importance for only 6% of the

participants. Such information would help customers to prepare and arrange their time accordingly, especially with lengthy and complex e-Transactions that might take a long time. Providing this information also reflects the quality of the e-Services, as customers' time is being considered and appreciated.

Figure 5.15 also shows that almost three quarters of the respondents (74%) attributed a high degree of importance to the provision of the last update time for the e-Services' websites. About 16% gave this medium importance and only 9% gave it low importance. Such information reflects the quality of the provided e-Services as it shows that the e-Services and related information are frequently updated and checked by the provider. It also helps to build up a positive perception about the quality of the e-Services. However, providing the time of the last performed e-Transaction was not as important for participants as the other information. It is clear from the bar chart in Figure 5.15 that around half the participants (51%) gave this facility a high degree of importance, 28% gave it medium importance and 20% gave it low importance. This indicates that the respondents were not so keen to know the time of the most recently performed e-Transaction as they were to know the other information.

The results revealed that the composite score was 1.96, suggesting that providing these informational services was highly important to the respondents, and it is likely that their provision would positively influence perception about the quality of e-Services, which in turn positively influences their adoption and the intention to use. The data investigation process revealed that there were no outlier cases detected in the data for this part.

Accessibility (ACC)

The *Accessibility* factor was measured with 5 items divided into two groups. The first group (*ACC* part1) comprised two items which were measured using a 5-point Likert scale. The second group (*ACC* part2) comprised three items which were measured with a 5-point Importance scale. Measuring items involved in both groups are shown in Table 5.10 below:

Table 5.10: The ACC factor measured from the citizens' perspective

Constructs	Item code	Measure
Accessibility	**ACC part1**	
	ACC1	I think that the existence of authorized offices to help users with EGOV use and correspondence is a good idea.
	ACC2	The difficulty of reaching e-Services would reduce my willingness to use EGOV (hidden and indirect links).

	ACC part2	The importance degree of providing several aspects and features that are related to the accessibility:
	ACC3	• A full access to my data with a full control of its presence in EGOV systems
	ACC4	• The existence of electronic machines in public areas to perform some e-Transactions
	ACC5	• The existence of official mobile apps that enable me to interact with EGOV

ACC part1

In this part, the respondents were asked their opinion about the provision of authorized and official offices that can help individuals with their use of e-Government systems. Such authorized offices provide services such as helping users with applying for their e-Transactions, solving issues and problems they may face and sending and receiving the required documents. It is likely that these authorized offices would facilitate access to e-Government services especially for elderly people and people in rural areas that do not have government agencies. Many unauthorized offices and mediators, who are usually found outside government agencies, currently offer most of these services, which could be provided by authorized offices. Item ACC1 was concerned with this aspect of accessibility. The second item (ACC2) asked participants whether difficulty in reaching e-Services would reduce their willingness to use e-Government services. Figure 5.16 below shows the results of this part:

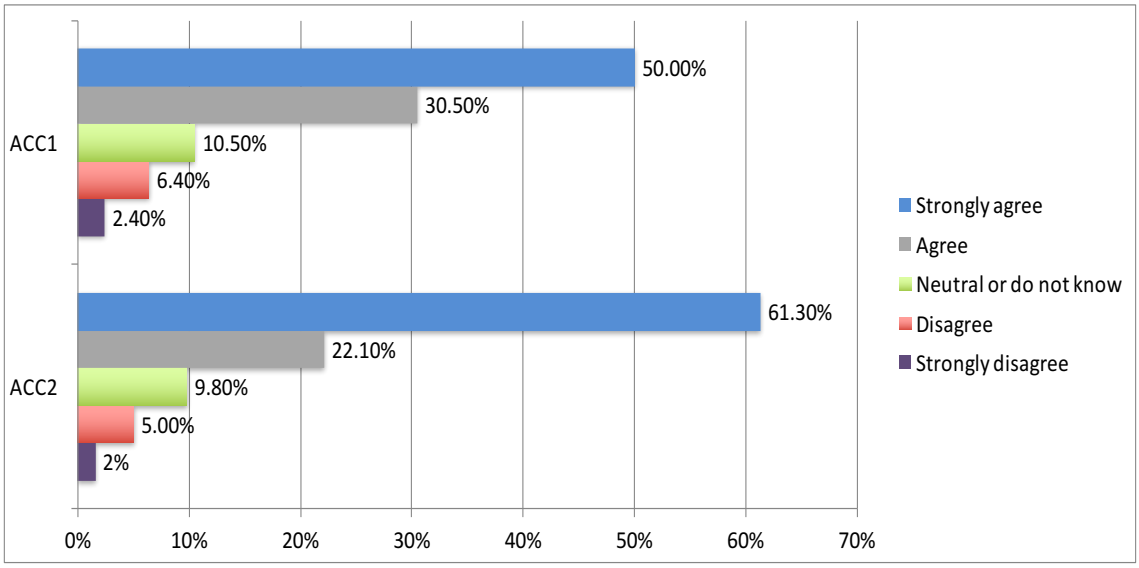


Figure 5.16: The results of ACC part1 measurement items (citizens)

Figure 5.16 shows that the majority (80%) of the respondents agreed that the existence of authorized offices to help users with e-Government use and correspondence is a good idea, around 10% were neutral or did not know and just 8% disagreed. The Likert score of item ACC1 is 1.80 and this suggests that the respondents were receptive to the provision of authorized and official offices that would enhance the adoption and use of e-Government systems for many people. In respect of item ACC2, Figure 5.16 shows that 83% of the participants agreed ("Strongly agree" and "Agree"), giving a Likert score of 1.63. The results show the more easily e-Services could be accessed, the higher the adoption and utilisation. The results revealed that the composite score for this part of the Accessibility factor is 1.72 which indicates that it is very likely that the accessibility factor has a significant positive influence on adoption and utilisation level. In terms of outlier cases in this part, 2 cases were detected, but the recalculated composite score (1.70) shows no significant impact of the detected outliers at this stage of analysis.

ACC part2

Three accessibility features were proposed in the second part for measuring the influence of the *ACC* factor; and the respondents were asked to allocate a degree of importance to them. Figure 5.17 below presents the results for these three items:

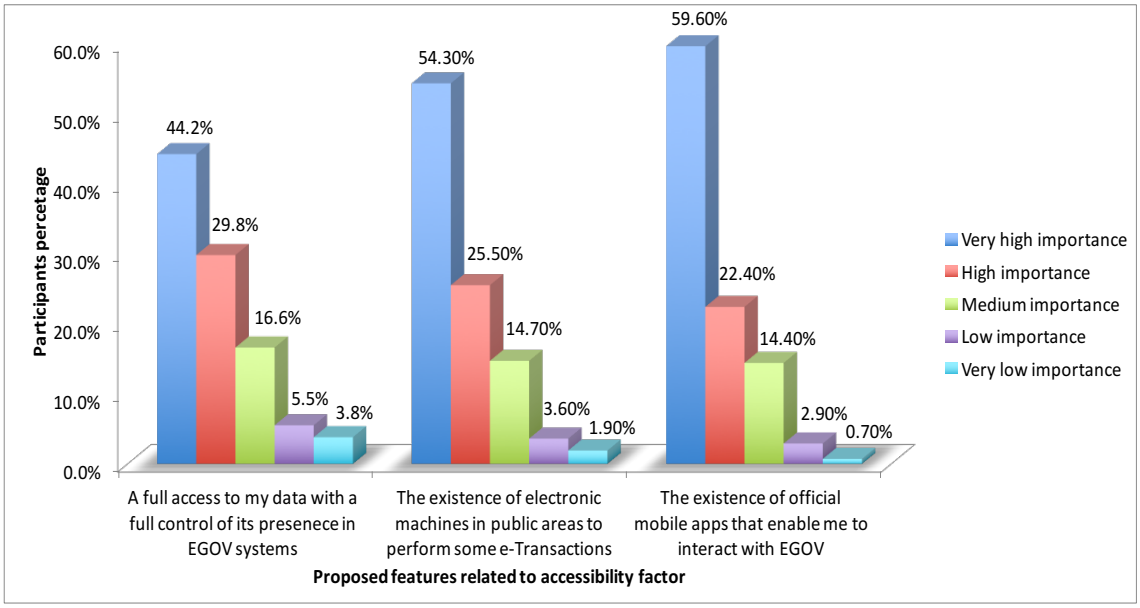


Figure 5.17: The results of ACC part2 measurement items (citizens) (see appendix G for larger graph).

It can be seen from Figure 5.17 that providing mobile applications and electronic machines in public areas were very important to most of the participants. Approximately 79% of the respondents reported that the existence of electronic machines that enable them to perform e-Transactions in various public places was of high importance. Such machines could be available in shopping centres, airports and train stations that are currently under construction. They can

also be provided inside government agency buildings, just like banks provide cash machines. These machines can minimize the load on government employees, reduce the crowds in agency buildings and enable customers to perform e-Services from different places thorough a different method.

Providing official applications that can be downloaded onto Smart devices and mobiles was highly important to 82% of the respondents. These applications should be implemented in a way that enables customers to access e-Services not just tracking and viewing government services they have made use of. Offering these different options to access to e-Government systems would significantly increase their adoption and utilisation. Furthermore, having full access with a full control over the stored data was highly important to almost three quarters of the respondents (74%). The Likert scores for all the proposed accessibility features were 1.94, 1.73 and 1.62 respectively, and indicate that it is very likely that the accessibility factor would have a strong impact on adoption and usage level. Moreover, the composite score of *ACC* part2 was 1.77, suggesting a very high importance for all the proposed accessibility features. It is clear from the results that providing different options that meet customers' demands for accessing e-Government services is crucial. The data of this part was examined and there were two outliers detected; the composite score after omitting the outliers was 1.75, indicating no significant effect from the outliers' values.

Perceived Trust (PT)

Perceived Trust is one of the Reliability factors proposed in the EGAUM. It was measured with seven items concerned with perceived trust, perceived security and perceived privacy. All of these three significant aspects were joined into one single variable (*Perceived Trust PT*). All the items in this factor used a 5-point Likert scale ranging from "Strongly agree" to "Strongly disagree". Table 5.11 presents the measured items and Figure 5.18 presents the results:

Table 5.11: The PT factor measured from the citizens' perspective

Constructs	Item code	Measure
Perceived Trust	PT1	I feel that the Internet is not safe to be used for dealing with government.
	PT2	I feel that EGOV is a safe environment to perform government transactions.
	PT3	I would hesitate to provide financial information through EGOV systems (e.g. bank account information).
	PT4	I would hesitate to provide personal information through EGOV systems (e.g. address and income).
	PT5	I feel that my data that is stored in EGOV systems can be used by other parties without my permission.

PT6	I feel that my data that is stored in EGOV systems can be misused.
PT7	I think that government agencies in Saudi Arabia can be trusted to provide trustworthy EGOV services.

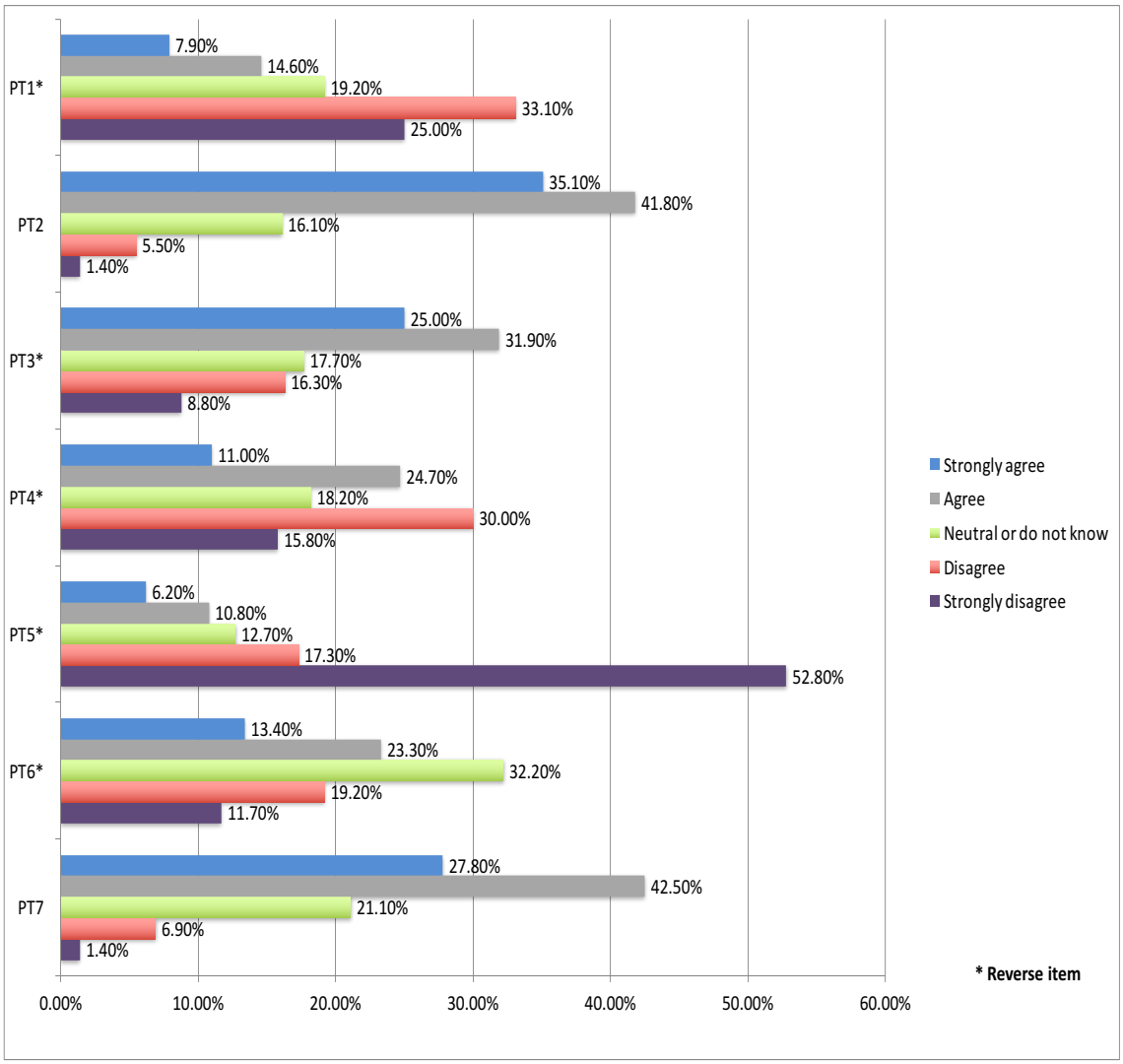


Figure 5.18: The results of PT measurement items (citizens) (see appendix G for larger graph).

In item PT1, the participants were asked whether they felt that using the Internet was not a safe way to conduct government transactions and access services. More than half of the respondents (58%) believed that it is safe, 22% believed it is not safe, while around 19% of the respondents were neutral. It is likely that the participants who did not believe in Internet safety when conducting government transactions and accessing services either do not trust the Internet as a mediator to interact with others, or they do not use it in a way that could show them that the Internet can be a safe method for official transactions. The Likert score obtained in this item was 3.52 indicating an overall agreement that the Internet is a secure and safe way to deal with government.

It is apparent from Figure 5.18 that the three quarters (76%) of the respondents agreed ("Strongly agree" and "Agree") with item PT2 that stated: "I feel that e-Government is a safe environment to perform government transactions", whereas only 6% disagreed ("Disagree" and "Strongly disagree") with the statement, giving a Likert score of 1.96. The results suggest that the respondents' perception of the security e-Government systems is high and this would possibly have a positive influence on their adoption and utilisation.

With regard to providing financial information through electronic government systems, the respondents were asked, in item PT3, whether they would hesitate to provide such information. Figure 5.18 shows that more than half the participants (56%) would hesitate to provide financial information such as bank account and credit card information through the online systems of the government agencies; and a quarter of the respondents (25%) did not have problem with disclosing financial information when using e-Government services. The obtained Likert score for this item was 2.52 suggesting a general hesitation and fear of providing financial data to the e-Government systems. It is likely that the respondents who agree with the statement do not trust the Internet and online systems when it comes to providing financial information. The results have been investigated further and it was found that three quarters (75%) of the respondents who did not feel that the Internet was a safe way to deal with the government would also hesitate to provide their financial data on e-Government systems. It is likely that this is because of cultural reasons, where individuals do not trust that virtual and intangible environments are a safe space to disclose financial information. Online transactions that involve financial activities are still in their early stages in Saudi Arabia; thus, many Saudis may not have performed online transactions that required financial information.

On the other hand, Figure 5.18 shows that the respondents were more tolerant of providing personal information, as opposed to financial information, and personal information includes address, income and marital status. Approximately 45% of the respondents disagreed with the statement in item PT4: "I would hesitate to provide personal information through e-Government systems" whereas 35% agreed with the statement, giving a Likert score of 3.14 which indicates that the respondents were uncertain about providing personal information. It is likely that some cultural aspects play an influence role in this uncertainty; for example, some individuals may not want others to know about their income, address or marital status, especially if such information can be accessed by employees. Although the results did not show an overwhelming agreement with the statement, at least they showed a difference in hesitation level when it comes to providing personal or financial data. The results of items PT3 and PT4 revealed that the respondents were more reluctant to provide financial information than personal information.

The respondents were also asked, in item PT5, whether they felt that their data stored in e-Government systems would be used by other parties, such as commercial companies or other government agencies, without their permission and knowledge. It is clear from Figure 5.18 that 70% of the respondents disagreed, while only 17% agreed with the statement. The Likert score of this item was 3.99 suggesting that the respondents generally believed that their data would not be shared with other parties without their knowledge and permission.

In item PT6, the participants were asked to indicate their views regarding the statement "I feel that my data that is stored in e-Government systems can be misused". Figure 5.18 shows that 36% of the participants agreed while 31% disagreed with the statement and 32% were neutral or did not know. The total score was 2.92, and this indicates that the respondents were uncertain about whether their data can be misused or not. This is possibly the case because there are no clear and published privacy and security policies that make users feel that their data will not be misused internally (by employees) or externally (by hackers and malicious Internet users).

The respondents largely agreed with item PT7 statement: "I think that the government agencies in Saudi Arabia can be trusted to provide successful e-Government services". Figure 5.18 shows that a large majority (70%) of the respondents agreed while only 8% of them disagreed with the statement. The Likert score of 2.11 indicates a high level of trust in the ability of Saudi government agencies to implement and provide successful e-Services. This general optimism is possibly because of the great efforts that have been spent recently on developing and implementing e-Government services by a number of government agencies in Saudi Arabia.

The total composite score for the *PT* factor was 2.56 and this indicates that the *Perceived Trust* factor is likely to influence the adoption and utilisation of e-Government systems and services. There were no outlier cases detected in the PT data when the total scores of all the items were tested with the standardized scores procedure (Z score).

Regulations and Policies (RP)

Three items were used to measure the influence of implementing specific regulations and policies relating to e-Government use. The respondents were asked to determine the degree of importance of three significant items; namely, information security policies, information privacy policies and regulations/laws related to reserving users and agencies' rights. Such items can provide a good indication of the extent to which the implementation of regulations and policies is important to citizen users of e-Government systems and how implementing such regulations and policies would influence their adoption and use. The measuring items of the *RP* factor are listed in Table 5.12, and Figure 5.19 shows the results:

Table 5.12: The RP factor measured from the citizens' perspective

Constructs	Item code	Measure
Regulations & Policies		The importance degree of providing and implementing regulations and policies related to the use of EGOV:
	RP1	• Information security policies
	RP2	• Information privacy policies
	RP3	• Regulations and laws related to reserve users and agencies rights

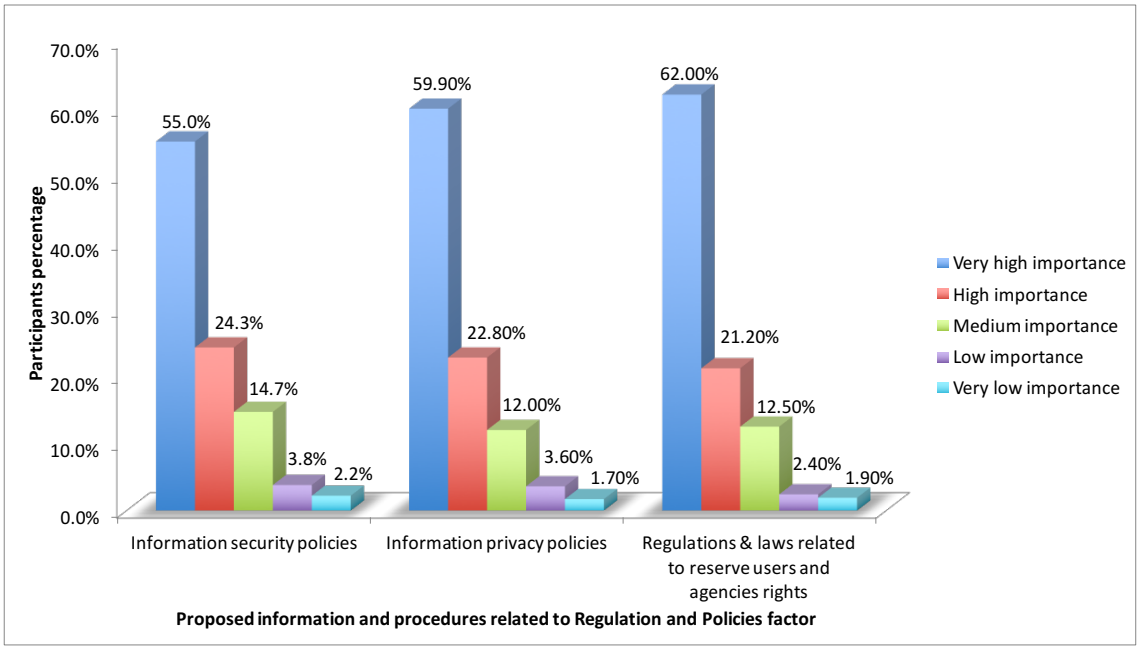


Figure 5.19: The results for RP measurement items (citizens) (see appendix G for larger graph).

It is clear from Figure 5.19 that implementing the proposed regulation and policies were highly important to the majority of the respondents. The bar graph shows that providing information on security policies for using e-Government services was of high importance to more than three quarters (79%) of the participants. Furthermore, around 82% of the participants chose "Very high importance" and "High importance" for providing policies that protected data privacy. The vast majority (83%) of the respondents also allocated the same level of importance to providing regulations and laws that protect their rights when using e-Government services and also protect the rights of e-Services providers. Making such regulations, policies and rules available and accessible to the customers is significant; and it means implementing them internally and making them available for the providers only is not enough. Implementing clear and strict regulations/policies for a national system that is used by all citizens and making them accessible and visible can play a vital role in adoption and utilisation, since this would influence other aspects including perceived trust and quality of service.

It is also clear from Figure 5.19 that between 12% and 14% of the respondents gave "Medium importance" to all the proposed RP items. Furthermore, very low percentages of the participants gave them a low or very low importance level (6% and 4% respectively). The Likert scores for all the *RP* items were 1.73, 1.64 and 1.61; and all these Likert scores can be interpreted as indicating that all three items have a very high degree of importance. Moreover, the composite score of the *RP* factor is 1.66, suggesting a very high possibility that implementing clear, strict and published regulations and policies would positively influence the level of users' adoption and usage of e-Government online services. Five outlier cases were detected with the new composite score calculated as 1.62, indicating the same interpreted result that *RP* is a 'Very influential' factor.

Intention to Use e-Government (ITU)

ITU is a dependent variable that was proposed in the research model EGAUM and it was measured with two items using a 5-point Likert scale ranging from "Strongly agree" to "Strongly disagree". Table 5.13 presents the items used to measure intention to use and Figure 5.20 shows the results of ITU:

Table 5.13: ITU measured from the citizens' perspective

Constructs	Item code	Measure
Intention to Use	IT1	I intend to use EGOV services and systems for all my governmental transactions.
	IT2	I do not mind to learn how to use EGOV to obtain e-Services and perform e-Transactions.

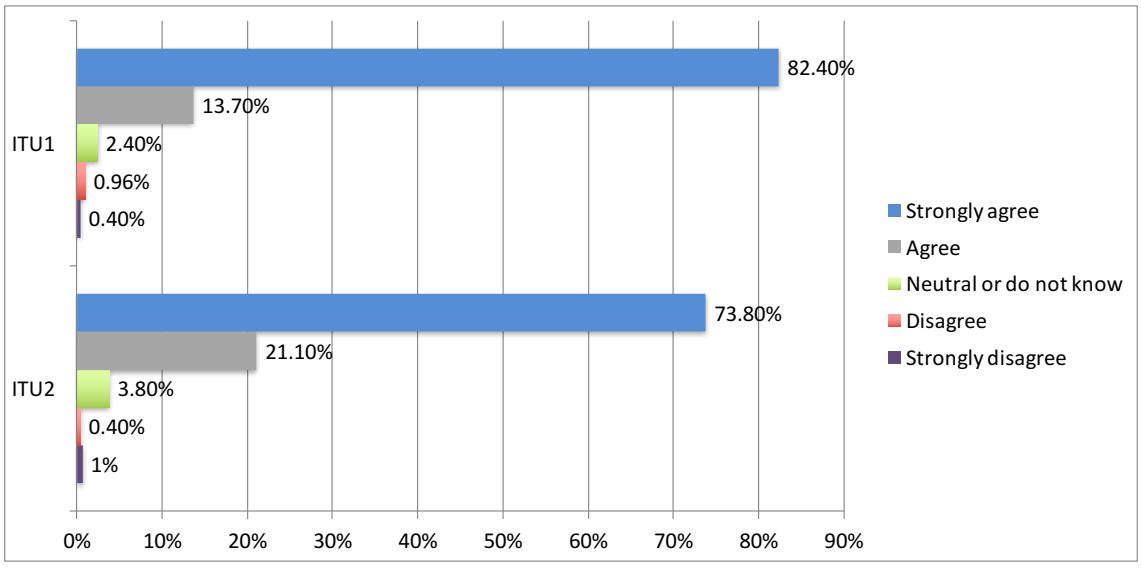


Figure 5.20: The results of ITU measurement items (citizens)

It is apparent from Figure 5.20 that the overwhelming majority (96%) of the respondents agreed with item ITU1 that stated: "I intend to use e-Government systems for all my government

transactions", whereas only 1% of them disagreed with the statement giving a Likert score of 1.23. This means that the majority of the participants had a very high intention and willingness to use e-Government services in Saudi Arabia; which reflects the high demand for successful e-Government systems and services. Furthermore, item ITU2 asked the participants to indicate their willingness and intention to learn how to use e-Government services. It is clear from Figure 5.20 that the majority (94%) of the respondents showed a high level of intention to do this. The Likert score for this item is 1.33, suggesting a very high willingness to learn how to use e-Government services and transactions. That composite score obtained for *ITU* was 1.28, and this also means that the respondents had very high level of intention to learn about and use online e-Services provided through e-Government systems. Three outlier cases were detected in the data for this variable and the recalculated composite score (after omitting outliers' values) was 1.26 indicating the same overall result.

Perceived E-Readiness of e-Government (PER)

The *PER* was another dependent variable that was proposed in the research model EGAUM. It was measured by two items using a 5-point Likert scale. The results for the *PER* items are shown in Figure 5.21 below:

Table 5.14: PER measured from the citizens' perspective

Constructs	Item code	Measure
Perceived E-Readiness of e-Government	PER1	I think that the current Saudi ICT infrastructure is not sufficient/efficient to implement successful EGOV.
	PER2	I feel that government agencies in Saudi Arabia are not able to implement satisfactory EGOV that meets customers' needs.

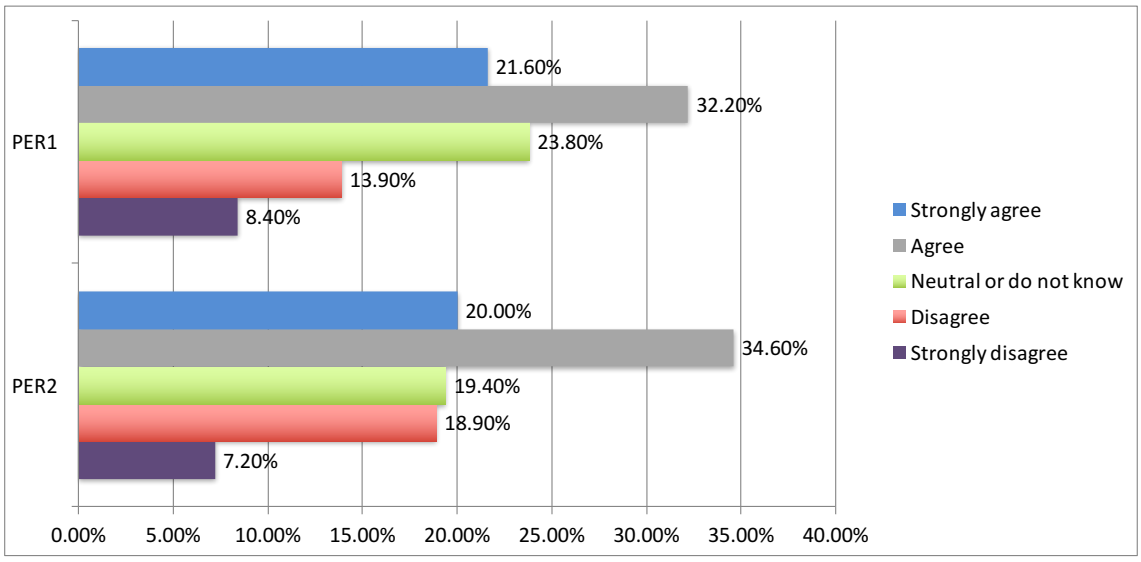


Figure 5.21: The results for PER measurement items (citizens)

In item PER1, the respondents were asked for their view of the statement "I think the current Saudi ICT infrastructure is not sufficient and efficient to implement successful e-Government systems". More than half of the respondents (53%) agreed, 23% of them were neutral and around 22% of them disagreed with the statement. These results gave a Likert score of 2.55 which indicates a general agreement that the current Saudi ICT infrastructure is not at the required or satisfactory level in terms of sufficiency and efficiency to implement successful e-Government systems providing electronic services and transactions.

In respect of the item PER2 statement: "I feel that government agencies in Saudi Arabia are not able to implement satisfactory e-Government systems that meet customers' needs", Figure 5.21 shows that more than half of the respondents (54%) agreed while almost a quarter of them (26%) disagreed with the statement. The results gave a Likert score of 2.59 which indicates that the majority of the participants had a relatively negative perception about the government agencies' ability to provide satisfactory e-Services.

The composite score obtained was 2.57 which indicated that the majority of the respondents had a relatively negative perception about the e-Readiness of e-Government systems in Saudi Arabia. Although the results of both items revealed a relatively low level of satisfaction with the efficiency of the current ICT infrastructure and the ability of government agencies to provide successful and satisfactory e-Government services, they also indicated that the participants' perception about the Saudi e-Government readiness was not that negative. This may be because several e-Services that are currently provided in Saudi are successful and efficient, but in general they are not sufficient to make the perceived e-Readiness of e-Government high. The outliers test showed that there were no cases detected.

5.4 Statistical analysis and hypotheses assessment from the citizens' perspective

A detailed descriptive analysis has been presented and discussed for the data that has been collected from Saudi citizens in the previous section. All the factors' items were presented and analysed separately to provide a complete and clear view of the citizens' perceptions, beliefs and use behaviours. The descriptive analysis also provided indications for the possible impact of the proposed factors on the citizens' level of adoption and utilisation of e-Government. Moreover, the descriptive analysis validated the importance and influence of the proposed factors in the EGAUM. In this section, the results from the descriptive analysis will be summarized in order to determine the influence of each of the proposed factors. Furthermore, the correlations between the independent variables (factors) and dependent variables (intention to use and perceived e-Readiness) will also be explored and investigated. The findings will

determine the acceptance or rejection of the research hypotheses (hypotheses fit). Additionally, the responses from the participants who participated in the semi-structured interviews and provided qualitative data will also be discussed in this section.

To explore the relationships between the research model constructs, the correlation coefficient needs to be computed for each proposed relationship. The correlation procedures were discussed in the Research Methodology Chapter (Chapter 4). These discussed procedures included Pearson's correlation coefficient and Spearman's correlation coefficient. Each procedure has number of assumptions that will be tested against possible violation and the appropriate correlation test will be performed accordingly. In this study, Spearman's correlation coefficient was mainly utilised. Moreover, the normality test will be conducted for each variable to determine the right correlation test procedure. The Shapiro-Wilk procedure will be the normality test procedure for this study. Finally, all outlier cases were treated, utilising the winsorization procedure (see Section 4.4.1 in Chapter 4).

5.4.1 Personal Factors (PF)

Based on the research model (EGAUM), this group of factors involved age, gender, education, location and income. These personal factors were proposed to have a possible influence on the users' adoption and utilisation of e-Government systems and services. This study attempted to explore the relationships between these factors and the intention to use to find the influence of each factor. However, the influence of two of these factors, namely gender and location, were not fully explored statistically. This is due to several reasons that were discussed in the demographic data section of this chapter (Section 5.2). These reasons include the difficulty of collecting data from females in person in Saudi Arabia, due to cultural and religious reasons. Moreover, most of the government transactions can only be performed by males or in some cases by a legal guardian who is also male. Thus, it was difficult to collect data in person from female participants. Additionally, the data collection for this sample was conducted in different geographical areas; namely, Riyadh, Jeddah and Alkhobar which are three major cities in Saudi Arabia. Locations such as rural towns and villages were not part of the areas that the data was collected from and this was due to the time limits for conducting this research. Therefore, the influence of user location of these types of areas was not fully explored statistically. Nevertheless, the influence of those two factors was investigated from the qualitative data that was collected in this research i.e. from the interviews.

With regards to the **age factor**, no significant difference was found in terms of intention to use among the citizens of different age bands. Table 5.15 shows that younger respondents tend to

have more intention to use than elders. However, the differences were not statistically significant. Thus, Hypothesis H1, from the citizens' perspective, is not supported.

H1: Different age groups will have different levels of intention to use e-Government systems/services.

Table 5.15: Intention to Use in citizens of different age groups

Age groups	ITU composite scores								Total
	1.00	1.50	2.00	2.50	3.00	3.50	4.00	5.00	
18 – 30	80 (69.5%)	15 (13%)	13 (11.3%)	5 (4.3%)	1 (0.86%)	1 (0.86%)	0	0	115
31 – 45	157 (69.1%)	42 (18.5%)	17 (7.4%)	5 (2.2%)	4 (1.7%)	0	1 (0.44%)	1 (0.44%)	227
46 – 60	45 (65.2%)	11 (15.9%)	9 (13%)	2 (2.8%)	2 (2.8%)	0	0	0	69
Over 60	3 (60%)	0	1 (20%)	0	1 (20%)	0	0	0	5
Total	285	68	40	12	8	1	1	1	416

Although the results did not show significant statistical differences amongst participants of different ages in terms of intention to use, most of interviewed participants (16 out of 18) stated that age is an influential factor. The majority stated that using e-Government services and transactions is difficult for elders due to several reasons which affect their adoption and willingness to use. One of the reasons is the digital illiteracy as one of the interviewee said *"... it is difficult for them to use e-Services because they are not accustomed to using computers and the Internet"*. Another said *"... there are some old people who do not know how to use computers and the Internet and this prevents them from using these e-Services"*. Some of the interviewees stated that they usually conduct e-Services on behalf of the elderly in their families, otherwise they go to the unauthorized service offices that can perform their e-Services. One of the participants stated that *"... there are still some old people who do not know how to withdraw from cash machines so how about performing e-Services that require more procedures, ... I saw some of them standing in front of cash machines waiting for other people to come to help them with cash withdrawal"*.

Another reason is the trust in using the electronic services, as one said *"old people usually prefer to go in person because they prefer something tangible, they do not trust e-Services"*. Although hypothesis H1 was not supported statistically from the findings of the targeted sample, the interviewees' responses showed the influence of age factor which need to be considered when implementing e-Government services. This research suggests that the influence of age that exists in Saudi Arabia and was reported by the interviewees is not related directly to age, but there are other, related factors that might have an influence on the adoption and use of e-Government by old people such as level of education, willingness to learn new things and cultural background.

For the **gender factor**, the results also showed no significant differences between males and females with regards to intention to use. Both genders have a high level of intention to use e-Government services and transactions, and this is clear from Table 5.16 below. Thus, Hypothesis H2, from the citizens' perspective, is not supported.

H2: Different genders will have different levels of intention to use e-Government systems/services.

Table 5.16: Intention to Use in citizens of different genders

Gender	ITU composite scores								Total
	1.00	1.50	2.00	2.50	3.00	3.50	4.00	5.00	
Male	266 (68.5%)	63 (16.2%)	39 (10%)	11 (2.8%)	0	0	1 (0.25%)	1 (0.25%)	388
Female	19 (67.8%)	5 (17.8%)	1 (3.5%)	1 (3.5%)	1 (3.5%)	1 (3.5%)	0	0	28
Total	285	68	40	12	1	1	1	1	416

The influence of the gender factor was also not supported by the interviewees, as the majority stated that gender would have no effect on the intention to use. One of the interviewee stated that it is more beneficial for females than males to use e-Government services and this is because of transportation constraints for females in Saudi Arabia. However, some difficulties that might affect the females' intention to use were also reported. One of the participants said *"There might be some difficulties for females to use e-Government services as they do not have experience of performing government transactions, so if the procedures and requirements are not clear, this would reduce their use of such e-Services"*. Another said *"... men can go to the government agency to perform or complete their transactions if they face difficulties with using e-Services but this is difficult for women"*. Thus, e-Services and e-Transactions need to be easy to use and their requirements and procedures need to be clear to encourage all users to adopt and use them.

In relation to the influence of **education level**, the results show variances in the intention to use across citizens with different educations level and thus, hypothesis H3 is supported. Table 5.17 below shows that citizens with a higher level of education such as Bachelor and Master degrees had a higher level of intention to use than citizens whose education level is secondary or less. It is very likely that education level is related to the willingness to use new technology and to learn how to use it. Moreover, the low intention to use by elderly citizens that was discussed earlier in this section is possibly related to their education level. Elderly people in Saudi Arabia usually do not have a high level of education and this reduces their willingness to learn how to use e-Services and e-Transactions. Therefore, their intention to use is generally lower than younger users who normally have a higher education level and a higher willingness to learn.

H3: Different levels of education will have different levels of intention to use e-Government systems/services.

Table 5.17: Intention to Use in citizens with different education levels

Education level	ITU composite scores								Total
	1.00	1.50	2.00	2.50	3.00	3.50	4.00	5.00	
Secondary school or less	19 (57.5%)	6 (18.1%)	5 (15.1%)	2 (6%)	1 (3%)	0	0	0	33
Diploma	40 (66.6%)	10 (16.6%)	5 (8.3%)	1 (1.6%)	2 (3.3%)	1 (1.6%)	0	1 (1.6%)	60
Bachelor	139 (69.1%)	32 (15.9%)	17 (8.4%)	9 (4.4%)	4 (1.9%)	0	0	0	201
Master	71 (71.7%)	16 (16.1%)	10 (10.1%)	0	1 (1%)	0	1 (1%)	0	99
PhD	16 (69.5%)	4 (17.3%)	3 (13%)	0	0	0	0	0	23
Total	285	68	40	12	8	1	1	1	416

In terms of the interviewees' responses, the majority agreed that education level influenced intention use; some identifying it as a significant factor and others stating that it was influential only to some extent. Generally, the supportive responses indicate there was a perception that the higher the educational level, the higher the intention to use and vice versa. Some participants insisted on the importance of digital literacy more than educational qualifications. One of the participants said: *"It (digital literacy) is an influential factor and more specifically the knowledge of computer and Internet use, some people do not know how to use computers even if they are educated"*. Another participant affirmed the importance of digital and computer literacy, stating: *"... the most important thing here is the knowledge level of using computers and technology because there are some people especially the older learners and old people who are educated and hold degrees but they do not know how to use computers and Internet that much"*.

The influence of the **location factor**, as stated earlier, is not explored statistically in this research; therefore, there is no statistical evidence that can accept or reject hypothesis H4. However, the influence of this factor was considered during the interviews with the participants. The interviewees were divided into supportive, who were the majority, and unsupportive of the influence of this factor. The supportive participants stated several aspects related to the impact of this factor. One of them said *"... people who live in rural areas would need to use e-Services more as the government agencies are far from them"*. Two other interviewees also suggested this same high desire for e-Services by people who live in rural areas and villages. Although this high demand in such locations might indicate a high level of willingness to use e-Government services, there are some constraints that could prevent people who live in such areas from using the e-Services or reduce their adoption level. Some of the supportive participants stated that the low education level and digital illiteracy in such areas might reduce the adoption and use. One of them said *"... the influence of this factor is related to the education level there because there are many people in these places who are not educated or at least they do not know how to use computers"*. Another constraint is the poor Internet connection in the

rural areas and villages. One of the participants stated *"... the Internet connection has not reached some rural areas yet or they are very poor, so the residents of these areas would not be able to use e-Services".* Therefore, the location factor involves several important aspects, such as internet connection and digital illiteracy in rural areas and villages in Saudi Arabia.

With regards to the **income factor**, the results showed no significant differences between citizens with different incomes. Table 5.18 shows the intention to use in citizens with different monthly incomes. Although the citizens whose monthly income is more than 20000 SR had the highest level of intention to use, the ITU composite scores of this category is not considered to be statistically different compare to the other categories. Therefore, hypothesis H5 is not supported.

H5: The user's income is related to the intention to use e-Government systems/services.

Table 5.18: Intention to Use in citizens with different incomes

Income	ITU composite scores								Total
	1.00	1.50	2.00	2.50	3.00	3.50	4.00	5.00	
0–4999	24 (61.5%)	7 (17.9%)	6 (15.3%)	2 (5.1%)	0	0	0	0	39
5K–9999	63 (68.4%)	13 (14.1%)	10 (10.8%)	2 (2.1%)	2 (2.1%)	1 (1%)	0	1 (1%)	92
10K–14999	91 (67.9%)	28 (20.8%)	10 (7.4%)	3 (2.2%)	1 (0.7%)	0	1 (0.7%)	0	134
15K–19999	64 (67.3%)	14 (14.7%)	8 (8.4%)	5 (5.2%)	4 (4.2%)	0	0	0	95
≥ 20K	43 (76.7%)	6 (10.7%)	6 (10.7%)	0	1 (1.7%)	0	0	0	56
Total	285	68	40	12	8	1	1	1	416

The majority of interviewees did not feel that an individual's income is an influential factor in terms of adopting and using e-Government services. Some of the participants stated that using e-Government services and transactions would save some costs such as the transportation cost and this would also benefit users financially. However, five interviewees believe that income is an influential factor and its influence is related to the financial ability to buy a computer or gain Internet access. One of them said when he was asked about the influence of this factor *"Yes it has an impact, some people are unable to buy computer or Smart device or even subscribe to Internet services in order to access e-Services".* Although the results did not show a significant impact for the income factor, it may need to be taken into account when looking at adoption levels especially for low-income groups.

5.4.2 Motivational Factors (MF)

This construct involves five factors, namely, *Perceived Benefits* (*PB*), *Socio-Cultural* (*SC*), *Awareness* (*AW*), *Functional Quality of Service/System* (*FQS*) and *Previous Experience* (*PE*). The summary of the descriptive analysis of all of these factors with interpretations of the results are shown in Table 5.19 below (except *PE* as this factor involves Likert-type items). The

influence of motivational factors was investigated statistically and the results are discussed below. Three factors were found to be the most significant in terms of influencing citizens' adoption and utilisation of e-Government systems and services and these factors are *PB*, *SC* and *FQS*.

Table 5.19: Summary of the descriptive analysis of MFs from the citizens' perspective

Factor	N	No. of items	Mean	S.D.	Results interpretation
PB	416	7	1.26	0.47	Very influential
SC	416	7	1.8	0.59	Influential
AW p1	416	4	2.4	0.7	Influential
AW p2	416	6	2.1	0.88	Influential
FQS p1	416	3	2.65	0.79	Neutrality
FQS p2	416	4	1.52	0.68	Very influential

5.4.2.1 The Perceived Benefits factor (PB)

It has been found from the descriptive analysis of this sample that it is very likely that the *Perceived Benefits* (*PB*) factor positively influences citizens' adoption and utilisation of e-Government systems. The composite score of *PB* was M=1.26 and this indicates a very positive impact of *PB* on the intention to use (see Table 5.19). This supports the hypothesized relationship (H6) between the *Perceived Benefits* factor and *Intention to Use e-Government* systems and services.

H6: There is a positive relationship between perceived benefits and intention to use e-Government systems/services.

The correlation between the two variables, namely, *Perceived Benefits* and *Intention to Use*, was investigated to find the strength and direction of the relationship. Both variables' scores were not normally distributed as assessed by Shapiro-Wilk's test ($p<0.5$). In this case, one of the Pearson's correlation coefficient assumptions (normality) was considered to be violated. Thus, Spearman's correlation procedure was utilized to assess this relationship. It was found from the correlation test that there is a positive relationship between *PB* and *ITU*, $r_s = .378$, with high level of perceived benefits associated with a high level of intention to use e-Government. This correlation was found to be statistically significant, $p < .0005$. Figure 5.22 below shows the relationship trend line that represents the positive relationship between *PB* and *ITU*. The figure also shows the monotonic relationship between *PB* and *ITU* which is considered one of Spearman's coefficient assumptions that need to be met.

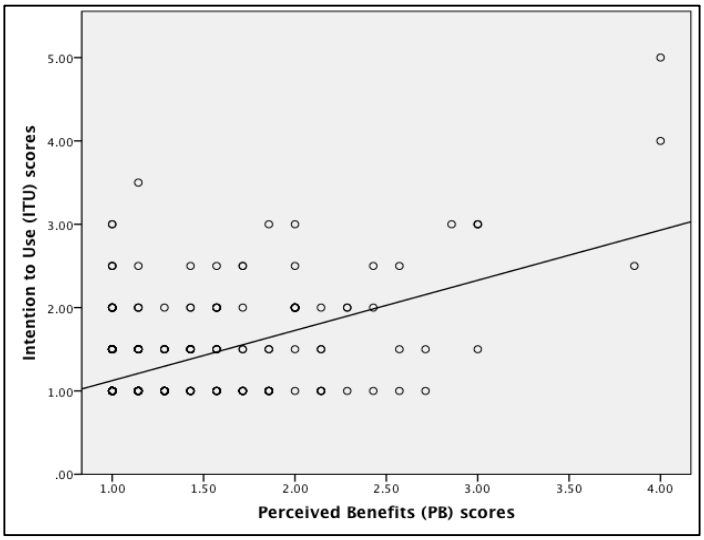


Figure 5.22: The relationship trend line between PB and ITU (citizens)

The graph above shows that as the score of the perceived benefits factor increases, the score for intention to use increases too. The results prove that there is a positive relationship between citizens' perception about the benefits of using e-Government services and their intention to use them. In other words, citizens' intention to use e-Government systems is likely to increase if they perceive the e-Services provided through e-Government systems to be useful. Therefore, the hypothesis for this factor is supported.

This positive relationship between *Perceived Benefits* and *Intention to Use* is in accordance with other studies in the literature. For example, Colesca & Dobrica (2008) conducted a study in Romania to identify which factors could affect citizens' adoption and use of e-Government services. They found that a high level of citizens' perception of usefulness, which is similar to perceived benefits proposed in the current research, directly enhances their satisfaction and implicitly the level of adoption and use of e-Government. Al-Hujran et al. (2011) also found that the perceived usefulness was a significant indicator of citizens' intention to use online government services. Additionally, AlAwadi & Morris (2009) studied the factors that influence the adoption of e-Government services in Kuwait, which is a close neighbour of Saudi Arabia and has a similar tradition, culture and environment. They found that if the users perceive e-Government services to be beneficial and useful, their intention to use such e-Service is likely to increase. They suggested that to get users to adopt and use e-Government services, these e-Services must be genuinely useful for them, and that e-Services should be implemented efficiently and effectively to meet users' needs. Citizens would perceive e-Government services as beneficial and useful if they could obtain the information they needed and carry out government transactions.

Additionally, most of the interviewees had a positive perception about the benefits of using e-Government; but the majority associated such benefits with successful implementation. They believed that using e-Services would save time and effort as well as avoiding the usual traffic jams around government agencies. Although there are not many complete electronic services currently implemented in Saudi Arabia, they are still better than traditional ways in terms of saving time and effort in general. One of the participants said *"... they are better and very useful but if they are implemented correctly, not just for booking appointments and simple services"*. Therefore, implementing completely electronic and beneficial e-Services and e-Transactions would retain the citizens' positive perception about e-Government and encourage them to use its services.

5.4.2.2 The Socio-Cultural factor (SC)

From the descriptive analysis of this factor (*SC*), the composite score obtained was 1.8 which indicates that the *Socio-Cultural* factor is likely having a positive influence on the citizens' intention to use e-Government services. This clearly can be seen from the interpreted results in Table 5.19. All the items' scores showed a positive trend in how the social and cultural aspects would affect the citizens' adoption and intention to use. The findings from the descriptive analysis support the hypothesized relationship between the *Socio-Cultural* factor and *Intention to Use*. In order to provide further support to these findings, this relationship was assessed using statistical tests. Thus, the correlation coefficient was computed between the two variables, namely, *SC* and *ITU*. From the normality test, it was found that both variables were not normally distributed as assessed by Shapiro-Wilk's test, $p<.05$. Therefore, Spearman's correlation procedure was also utilised for this factor. It was found that there is a statistically significant positive relationship between the *Socio-Cultural* factor and the *Intention to Use e-Government*, $r_s = 0.380, n=416, p <.0005$. This factor is one of the most significant factors that correlate positively with citizens' intention to use. In addition to the previous findings from the descriptive analysis, the correlation test result also supports the hypothesized relationship (H7).

H7: There is a positive relationship between Socio-Cultural factor and intention to use e-Government systems/services.

Figure 5.23 below shows the correlation trend line between the two variables. When comparing the results between this sample and the other samples in this research, we can see the difference in the impact degree of *SC* factor. For example, in the results from the business sector sample which will be discussed later in Chapter 7, the correlation between *SC* and *ITU* was relatively weak ($r_s = .098$) compared to the correlation in the citizens' sample. This indicates that the *SC* factor had a greater influence on public users (citizens) than users from the business sector in terms of intention to use e-Government systems.

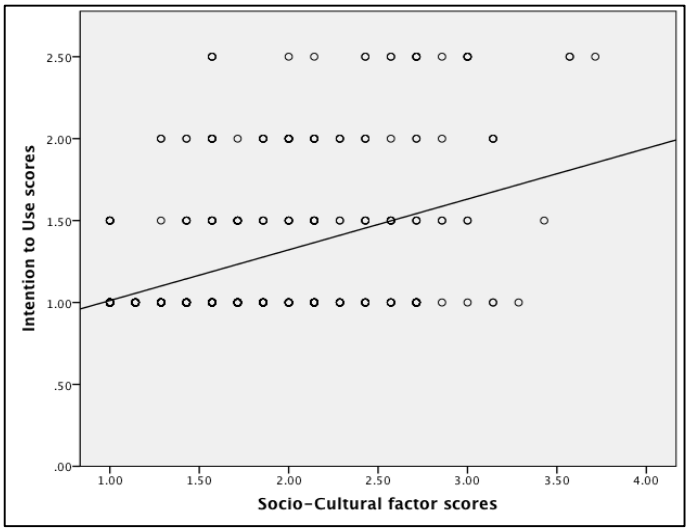


Figure 5.23: The relationship trend line between SC and ITU (citizens)

There is a debate in the literature about the influence of the social and cultural factor on the intention to use. For example, Alshehri et al. (2012) found that the social factor does not have a significant impact on the intention to use e-Government services. AlAwadi & Morris (2009) also found that social influence was unimportant to many participants in their study. On the other hand, Al-Hujran et al. (2011) found in their study that number of cultural dimensions had a significant impact on the citizens' intention to adopt and use e-Government, namely, power distance and uncertainty avoidance. They utilised an integrated model that combined between the Technology Acceptance model (TAM) and Hofstede's national culture dimensions (Al-Hujran et al., 2011). Furthermore, Shareef et al. (2011) found that Perceived Image, which is one of the *Socio-Cultural* aspects in the current research, positively correlates with the adoption and usage of e-Government. The findings in the current research revealed that there is a positive relationship between the social and cultural aspects and the Saudi citizens' intention to adopt and utilise e-Government systems.

In terms of the interviewees' opinion, the majority supported the influence of this factor and they mentioned some social and cultural aspects that have influence in Saudi society. Most of them stated that people would be affected by the experience and opinions of others. One of them said *"Yes I believe that the social factors in particular have an influence because the people here in Saudi influence each other"*. Another stated that*"... many individuals would be influenced by the others' activities and opinions, especially the relatives"*. One of the interviewees stated another aspect of this factor and he stated that*"... there are some people who are hesitant to use e-Services because it is still a new culture in Saudi Arabia especially if they involve payments"*. Moreover, one of the participants commented on the culture of dependency and he stated*"... there are advertisements in the newspapers that offer performing*

e-Services on behalf of people, why do they not do it themselves?" Such social and cultural aspects need to be considered when implementing e-Government services.

5.4.2.3 The Awareness factor (AW)

As discussed in the descriptive analysis section in this chapter (Section 5.3), the *Awareness* factor was measured with two groups of items. The Likert scores of both groups revealed that it is likely that the *AW* factor influences the level of citizens' adoption and use. Table 5.19 (Section 5.4.2) presents the interpretation of the results for the two groups of items involved in the descriptive analysis of this factor.

The relationship between the *Awareness* factor and *Intention to Use e-Government* services was assessed for further proof of the positive influence of this factor. Since the data for both variables (*AW* and *ITU*) were not normally distributed as assessed by Shapiro-Wilk procedure, $p<.05$, Spearman's correlation coefficient was computed to explore the relationship. It was found that there is a statistically significant positive association between *Awareness* and *Intention to Use*, $r_s = 0.206$, $n=416$, $p>.0005$. Although the correlation coefficient was small according to Cohen's guide that was discussed in Chapter 4 (Cohen, 1988), it shows a positive relationship between the two variables. Thus, the hypothesized relationship (H8) is supported.

H8: There is a positive relationship between awareness and intention to use e-Government systems/services.

This means that as citizens' awareness about e-Government services, potentials and benefits increases their intention to use also increases. The findings from the citizens' sample are similar to those from users from business sector sample in terms of the positive influence of the *Awareness* factor, but they were different in the strength of influence (r_s = 0.206 in the citizens' sample and r_s = 0.46 in users from the business sector sample). The *Awareness* factor plays an important role in the diffusion of technology and interactive systems such as e-Government systems. This positive influence of the *Awareness* factor was also supported in the literature. For example, AlAwadi & Morris (2009) found that *AW* correlates positively with the willingness to use e-Government systems in Kuwait; and Alshihi (2005) also found the same positive relationship between the users' awareness and their intention to use e-Government services in Oman. Additionally, all the interviewees strongly supported the importance of the awareness and advertising for adoption and use. However, some of them complained about the deficiency and weakness of such awareness and advertising campaigns. One of them stated that *"... there are awareness campaigns but they are not enough, I have not seen any advertisement*

for many electronic services. The people knew about these electronic services from each other or by visiting the government agencies who informed them about such services". Another said: *"It (awareness) is very important and influential in my opinion, but unfortunately there is shortage of these campaigns. These campaigns should be intensified to increase awareness and also to increase the sense of safety when using the government e-Services".* This suggests that more awareness, advertising and training campaigns should be provided to achieve higher adoption and usage level.

5.4.2.4 The Functional Quality of Service/System Factor (FQS)

The *Functional Quality of Service/System* factor also comprised two groups of items. The Likert scores of both groups were slightly different in terms of their interpretation. The first group concerned citizens' perception about the general quality of the current e-Services, the efficiency of delivery and payment methods as functional aspects that reflect the quality of e-services. Since e-Government services are still in their early stages in Saudi Arabia and a limited number of e-Services are currently provided, participants were generally uncertain about the quality of the e-Services as they may have not used such e-Services to a degree that lets them judge the quality in general. Moreover, other functional aspects that were proposed in the measurement of this factor were not widely and efficiently implemented. For example, postal services are not widely used in Saudi Arabia and most citizens possibly have not used them; also, online payment methods are limited in Saudi Arabia. Thus, the respondents were uncertain when they were asked to determine their perceptions about the influence of some functional aspects related to the quality of e-Services. This is the reason for why the result of the first part of the *FQS* were interpreted as neutral, as the Likert score of this part was 2.65, indicating uncertainty in the responses to this part. On the other hand, the results for *FQS* part2 interpreted it as a very influential factor (see Table 5.19). This part is concerned with measuring the importance of several functional features that could increase users' adoption and use of e-Government services.

To investigate the results further and to explore the relationship between *Functional Quality of Service/System* and *Intention to Use*, the correlation between the two variables was assessed. The *FQS* data was tested for normality to determine which correlation assessment was suitable and found to be not normally distributed (the Shapiro-Wilk procedure showed $p<.05$); therefore, Spearman's correlation test was utilised. The correlation test revealed that there was a positive relationship between *FQS* and *ITU*, $r_s = 0.312, n=416, p>.0005$. This means that when the functional quality of e-Services increases, the citizens' intention to use them also increases. This test showed that correlation coefficient was statistically significant. The results shown by the

relationship trend line that can be seen in Figure 5.24 support the hypothesized relationship (H9).

H9: There is a positive relationship between functional quality of service and intention to use e-Government systems/services.

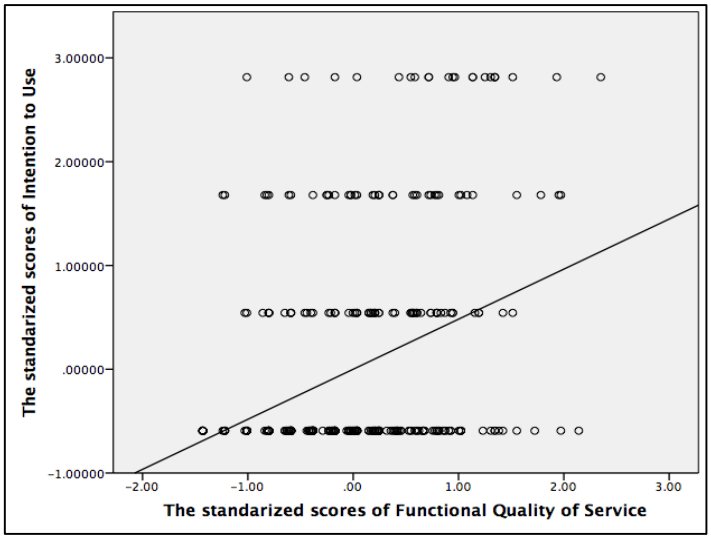


Figure 5.24: The relationship trend line between FQS and ITU (citizens)

The influence of *FQS* on the users' adoption and utilisation is stronger in the citizens' sample than in the business users sample ($r_s = 0.312$ and $r_s = .165$ respectively). The positive relationship between *FQS* and *ITU* that was found in this study is in accordance with a study conducted in Pakistan which is also a developing country (Rehman et al., 2012). Enhancing the quality of functional aspects of e-Services provided by governments, such as the delivery and payment methods, is very likely to increase citizens' adoption and use. One of the participants who participated in the interviews stated that *"... there will not be real and effective e-Services without those supportive services"* which include delivery and payment services. However, most of the interviewees complained about the limitations in the delivery and payment services which are from the functional aspects that reflect the quality of the e-Services. One of the interviewees said *"Mail services are not as effective as required and many people are complaining about them. For me, I prefer not to use them for sending or receiving my documents".* Another stated that *"The Saudi mail is very weak, and if they give me the option to choose from going myself to drop/take my documents or send them by mail, I would go myself".* Another interviewee stated that the delivery and post services needed to be improved.

Furthermore, three of the participants stated that the payment for e-Services and e-Transactions need to be at the same website as that of e-Service being used, and that separating them would cause problems which would affect the quality. One of them said about his experience of using e-Government services: *"... I conducted an e-Transaction from the agency's website and I paid*

for it on different website. The payment website gave me a reference number for my payment to use in completing the steps of the e-Transaction. This way could cause problems or delays because if I entered the wrong reference number, the agency would not know that I paid and I would not be able to complete my transaction". Another interviewee said*"... it needs to be improved. There is no direct payment when performing online transactions at the same website, many e-Services require payment first through the SADAD system and then you can perform your e-Transaction".*

Besides the significance of providing improved and effective delivery and payment services, providing other functional features that reflect the quality of the provided e-Services would also play a strong role in increasing the intention to use online government services. Such functional features include the ability to track and view the completed e-Transactions, the ability to evaluate and rate e-Services as well as providing alert messages about the status of the e-Transactions conducted.

5.4.2.5 The Previous experience factor (PE)

The influence of previous experience on citizens' intention to use e-Government was measured with four Likert-items, as discussed in the descriptive analysis section in this chapter (Section 5.3). From the descriptive analysis results, it was clear that the respondents were more satisfied with their previous experience of using non-Government online services than the government ones. Moreover, it was clear that the previous use of both types of online services had an influence on the respondents' intended future use and it was mostly a positive influence. Thus, the relationship between *PE* and *ITU* is assessed statistically in this section to determine the strength and direction of influence.

Spearman's correlation test was utilized since the normality test for both variables (*PE* and *ITU*) showed that their data was not normally distributed, as assessed by Shapiro-Wilk's value, $p<.05$. The results revealed that there is a positive correlation between the previous experience of using online services and intention to use, $r_s = 0.181, n=350, p>.0005$. This means that the more positive and satisfactory the previous experience is, the higher the citizens' intention to use e-Government. Although the correlation coefficient is considered small, the direction of the relationship indicates a positive impact. The result thus supports the hypothesized relationship (H10)

H10: There is a positive relationship between previous experience and intention to use e-Government systems/services.

The influence of the respondents' satisfaction about their previous experience (including both government and non-government online services) has also been investigated. It was found that there is a statistically significant positive correlation between the users' satisfaction about their previous use of online services and their intention to use e-Government services, $r_s = 0.145, n=350, p>.0005$. This draws the attention to the importance of customers' satisfaction needing to be measured regularly when providing online services. This is especially important for national e-Services that are provided to a large number of users. The users' satisfaction when using e-Government is not only linked positively to future use, it also positively influences their trust in government agencies (Welch et al., 2004).

5.4.3 Technical Factors (TF)

This construct comprises three different factors, namely, *Perceived Simplicity (PS), Technical Quality of Service/System* (*TQS*) and *Accessibility* (*ACC*). It was found from the statistical analysis that *PS* was the most significant factor to influence citizens' adoption and utilisation. The following table (Table 5.20) summarizes the results from the descriptive analysis of this construct and also shows their interpretation.

Table 5.20: Summary of the descriptive analysis of TFs from the citizens' perspective

Factor	N	No. of item	Mean	S.D.	Results interpretation
PS p1	416	3	2.02	0.56	Influential
PS p2	416	3	1.53	0.68	Very influential
TQS p1	416	2	2.43	0.92	Influential
TQS p2	416	4	1.96	0.82	Influential
ACC p1	416	2	1.72	0.72	Very influential
ACC p2	416	3	1.77	0.77	Very influential

5.4.3.1 The Perceived Simplicity factor (PS)

The descriptive analysis of the *Perceived Simplicity* factor showed its importance for the citizens' adoption and utilisation. *PS* was measured with two groups of items and the interpreted results of both groups were influential and very influential, respectively (as shown in Table 5.20). Statistically, the direct correlation between the *Perceived Simplicity* factor and *Intention to Use* was examined. *PS* data was not normally distributed as assessed by Shapiro-Wilk, $p<.05;$ thus, the relationship was measured using Spearman's correlation coefficient. It was found that there is a positive relationship between *PS* and *ITU*, $r_s = 0.377, n=416, p>.0005$. The correlation was statistically significant and its linear trend is shown in Figure 5.25 below. The results of both the descriptive analysis and statistical analysis support the hypothesized

relationship between *PS* and *ITU* (H11a). This is considered to be a direct positive influence on the respondents' intention to use e-Government systems.

H11a: There is a positive relationship between perceived simplicity and intention to use e-Government systems/services.

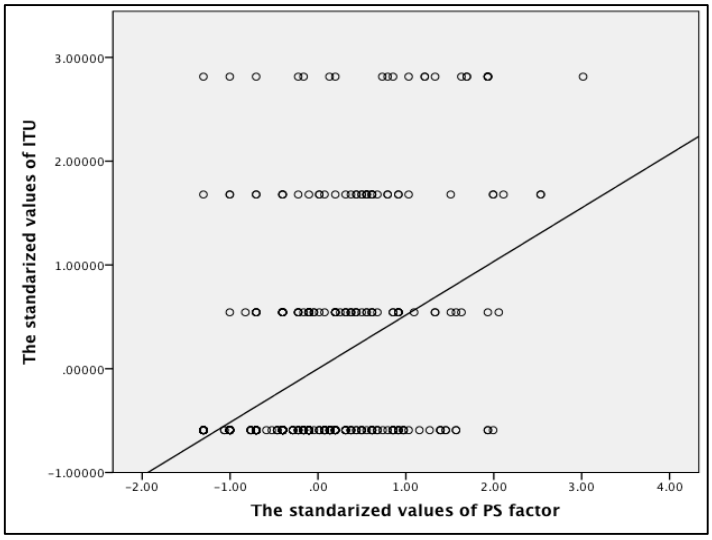


Figure 5.25: The linear relationship between PS and ITU (citizens)

The other hypothesized relationship, between *Perceived Simplicity* and *Perceived E-Readiness* of e-Government systems, was also examined with Spearman's correlation procedure to determine the indirect relationship between *PS* and *ITU* through *PER*. It was found that there was no positive relationship between *PS* and *PER* (reversed), $r_s = -0.133, n=416, p>.0005$. This means that the second hypothesis that is related to the positive relationship between *PS* and *PER* (H11b) is not supported.

H11b: There is a positive relationship between perceived simplicity and perceived e-Readiness of e-Government.

To sum up the influence of *Perceived Simplicity* on the citizens' adoption and utilisation, *PS* is positively associated with citizens' intention to use e-Government. Thus, it is likely that providing easy to use e-Services and implementing different features that make them simple to use would increase citizens' willingness to adopt and use e-Government services. On the other hand, the simplicity of the provided e-Services is not associated with users' perception about the e-Readiness of e-Government. They possibly consider other factors when they judge the readiness of the e-Government infrastructure and the ability of government agencies to provide satisfactory online services. Marchewka et al. (2007) claimed that the ease of use of a system can be a significant factor that determines the user's acceptance of information technology. Moreover, Rehman et al. (2012) also found that in Pakistan perceived ease of use influences the

users' intention to use e-Government systems. It is suggested in this research that the simplicity of using e-Government services is fundamental in order to achieve a high adoption and utilisation level. Different users in the society with different computer skills are targeted when implementing e-Government services; thus, the providers should consider the importance of this factor when implementing them.

Additionally, the significance of the simplicity factor was strongly supported by the interviewees. Most of them stated that if e-Services and e-Transactions were complex and difficult, people would not use them and they would visit the agencies in person or at least they would seek help from the unauthorized service offices. One of them stated: *"It (simplicity) is very important and influential since people are using them (e-Services) to perform their government transactions easily, whereas if they found them difficult, they would go to the government office and therefore there would be no benefit to these e-Services".* Another said *"... it is one of the main reasons for the success of these e-Services because the goal of implementing them is to facilitate performing transactions, so it is very important for them to be easy and clear".* This factor should be considered from the beginning when implementing any e-Service.

Some participants reported some issues that made their use of e-Services difficult. One of them stated that*"...lack of clarity of the procedures and steps in some e-Services is the issue I face".* Another said *"... the most prominent problems are the system failure and the lack of detailed description for performing and completing the transaction".* Thus, providing detailed explanations on how to perform e-Transactions and what the requirements are is just one aspect that would facilitate the use. Most of the proposed factors have some aspects that could relate to simplicity and considering them would make use easier.

5.4.3.2 The Technical Quality of Service/System (TQS)

TQS was another aspect of the quality of service, besides *FQS,* that was measured in this research. It concerns the technical aspects that reflect the quality of e-Services and its influence on users' adoption and utilisation. The relationship between the *TQS* factor and the adoption and use of e-Government can be interpreted from the descriptive analysis, as indicating that the *TQS* is an influential factor (see Table 5.20 above). To assess this relationship statistically, the correlation coefficient between *TQS* and *ITU* was produced utilising Spearman's correlation procedure. It was found that there was a positive correlation between the two variables and it was statistically significant, $r_s = 0.145, n=416, p>.0005$. This means the better the technical quality of e-Services, the higher the citizens' intention to use them. Although the overall results

of both analysis processes (descriptive and statistical) did not show a highly significant influence of *TQS* on *ITU*, they revealed that the relationship between both variables was positive, which supports hypothesis (H12a).

H12a: There is a positive relationship between technical quality of service and intention to use e-Government systems/services.

With regard to the proposed relationship between *TQS* and users' perception about the e-Readiness of e-Government systems in Saudi Arabia (H12b), the correlations level between the two variables was also examined with Spearman's correlations coefficient as both variables' data was not normally distributed. There was no positive correlation between *TQS* and *PER* and this means that the hypothesized relationship was not supported, $r_s = -0.251, n=416, p>.0005$.

H12b: Thereis a positive relationship between technical quality of service and perceived e-Readiness of e-Government.

We can summarize the influence of *Technical Quality of Service* factor on the citizens' adoption and utilisation as being that whenever the technical quality of the provided e-Services increases, the citizens' intention to use them would increase. Alshehri et al, (2012) found that the quality of e-Government websites, which is one of *TQS* measured aspects in this research, significantly influenced the acceptance and use of e-Government services in Saudi Arabia. However, the influence of the *TQS* factor in this research was not found to be significant and strong in general. On the other hand, *TQS* does not influence the citizens' perception about the e-Readiness of e-Government online services. In other words, the high technical quality of the provided e-Services does not necessary increase the perceived readiness of e-Government systems, and this was contrary to what was expected and proposed. This result is unlike that for other users, such as users from business sector where *TQS* positively influence their perception about readiness of e-Government (see 7.4.3.2 in Chapter 7).

Some interviewees mentioned several issues related to the technical quality of service/system which need to be addressed and considered. The system failure, technical errors and slow response of the website were the most dominant ones. One of the participants stated: *"The most important issue that I usually face is the technical faults in the website and this delays completing the transactions"*. Another said *"... the system and website problems are mostly the issues that I face"*. Two of the interviewees also reported another technical issue which is the attachment size that they need to upload for some e-Transactions. One of them commented on this issue *"... I need to minimize the files' size every time and this is not good"*. This is a technical aspect that relates to the quality of the service and needs to be considered when implementing e-Services.

5.4.3.3 The Accessibility factor (ACC)

Two groups of items were developed to measure the influence of the *Accessibility* factor on adoption and utilisation. They were investigated and analysed in detail in the descriptive analysis (Section 5.3.) and the interpreted results are presented in Table 5.20. The first part (*ACC* part1) revealed that the difficulty of accessing government services online would significantly and negatively affect citizens' intention to use e-Government systems. It also revealed that providing authorised and official intermediaries to help citizens to access to e-Services is very likely to increase the adoption and use, and the majority of participants welcomed this method of access. Moreover, the second part (*ACC* part2) revealed that providing different methods of access such as electronic machines in public areas and mobile applications was very important for the majority of participants and this indicated a significant and positive influence on the citizens' intention to use e-Government. So the findings from the descriptive analysis indicated that *ACC* is one of the most likely factors to influence the users' adoption and use.

In terms of statistical analysis, the direct relationship between *ACC* and *ITU* was assessed using Spearman's correlation procedure since neither variable's data was normally distributed. It was found that there is a positive relationship between them and the correlation coefficient was statistically significant, $r_s = 0.244, n=416, p>.0005$. This finding, besides the findings from the descriptive analysis, supports the hypothesized direct relationship between *Accessibility* and *Intention to Use* (H13a).

H13a: There is a positive relationship between accessibility and intention to use e-Government systems/services.

On the other hand, there was no positive association between *Accessibility* and *Perceived E-Readiness* as assessed by the Spearman's correlation coefficient, $r_s = -0.142, n=416, p>.0005$. This indicates that the second hypothesized relationship of this factor was not supported in citizens' sample (H13b).

H13b: There is a positive relationship between accessibility and perceived e-Readiness of e-Government.

Accessibility is considered as one of the main barriers and challenges in implementing e-Government systems (Ngulube, 2007; Ebrahim & Irani, 2005). Although, from the statistical analysis of this sample's data, it was not shown to be one of the most significant factors, the descriptive analysis revealed its high importance to the majority of respondents. Thus, the key to success in an e-Government implementation is to provide adequate, reliable, easy and

different access methods that support the users' experience when usinge-Government services and transactions. Moreover, the respondents who participated in the interviews also supported the importance of accessibility and they commented on some aspects related to it. For example, one of the interviewees stated that *"The Internet is the most important element in accessibility, it needs to be provided everywhere with high quality"*. The lack of fast and reliable Internet connection would make all the accessibility aspects and methods more difficult. Another interviewee also suggested that*"... providing public electronic machines that are similar to the cash machines in public areas would facilitate the accessibility especially for those who do not have an Internet connection"*. The mobile application (or m-Government) was also suggested by the majority of the interviewees. One of the interviewees said: *"I hope to see an increase in the applications on the Smart phones because it is the easiest way for citizens to access e-Services; most of the people spend most of their time using their mobiles"*. The importance of those accessibility methods, namely, electronic machines and mobile applications were measured statistically in this research and they were found to be of very high importance to the participants.

5.4.4 Reliability Factors (RF)

This construct comprises two factors which are *Perceived Trust (PT)* and *Regulations and Policies (RP)*. The influence of both factors was discussed in the descriptive analysis in this chapter (Section 5.3) and Table 5.21 below summarizes its results. Statistical evidence of their influence and their relationships with the citizens' intention to use will be discussed thereafter. It was found from the statistical analysis that *RP* is the most significant factor.

Table 5.21: Summary of the descriptive analysis of RFs from the citizens' perspective

Factor	N	No. of item	Mean	S.D.	Results interpretation
PT	416	7	2.56	0.66	Influential
RP	416	3	1.66	0.88	Very influential

5.4.4.1 The Perceived Trust factor (PT)

PT was measured with 7 items that provide a holistic view of the impact of perceived trust, including different aspects such as security, privacy and trust. All these seven items were investigated and analysed in the descriptive analysis section (Section 5.3). The results can be interpreted to show that *PT* is an influential factor on citizens' adoption and use (see Table 5.21).

In order to investigate the relationship between *PT* and citizens' intention to use, Spearman's correlation coefficient was utilized. This is because neither variable's data (*PT* and *ITU*) was normally distributed, as assessed by the Shapiro-Wilk's test, $p<.05$. It was found that *Perceived Trust* positively correlates with the *Intention to Use*, $r_s = 0.261$, $n=416$, $p>.0005$. This means, when the perceived trust about e-Government systems and services increases, the users' intention to use them also increases. Although the correlation was not strong, it indicated the positive impact of the citizens' perceived trust on their intention to use government online services, and this supports the hypothesized relationship for this factor (H14a).

H14a: There is a positive relationship between perceived trust and intention to use e-Government systems/services.

The results also showed a positive impact of *Perceived Trust* on citizens' *Perceived Readiness* of e-Government. In other words, if the citizens' perceived trust about e-Government increased, their perception about the e-Government readiness including ICT efficiency and agencies' ability was also likely to increase as was their intention to use e-Government. This relationship (between *PT* and *PER*) was assessed using Spearman's correlation procedure and the test showed a statistically significant result at $r_s = 0.180$, $n=416$, $p>.0005$. Therefore, the hypothesized relationship between *PT* and *PER* (H14b) is also supported.

H14b: There is a positive relationship between perceived trust and perceived e-Readiness of e-Government.

The results here are similar to those reported in the sample of users from the business sector in terms of the positive influence of *PT* on users' adoption and utilisation (see Chapter 7). However, the association in the citizens' sample was stronger and more significant. This is possibly because citizens are more concerned about privacy and security when performing electronic transactions than private sector employees (who represented 72% of the business sample); which is a matter of who is the direct beneficiary. In other words, private sector employees access e-Services and conduct e-Transactions as part of their job, whereas citizens need to do this for their personal benefits. Thus, factors such as trust, security and privacy would be more important for citizens than for private sector employees.

Although *PT* was not found to be a highly significant factor, the results showed its high importance to the citizens and its positive relationship with their intention to use. The *PT* factor, which includes perceived security and perceived privacy, is a crucial factor when it comes to using virtual systems such as e-Government. Shareef et al. (2011) claimed that security and privacy factors are potential contributors in developing trust when using e-Government systems. Being able to place trust in a system is critical to consumers' successful interaction with that

system (Gefen et al., 2003). Warkentin et al. (2002) extensively discussed the impact of trust in e-Government adoption and usage and they proposed that perceived trust would lead to an intention to adopt e-Government. Several studies in the literature found that Perceived Trust is a significant factor that influences the adoption and intention to use e-Government. For example, Carter & Belanger (2005) conducted a study by surveying a broad diversity of citizens at a community event in the US and they found that trust was a significant factor. They suggested that higher levels of perceived trustworthiness are positively related to citizens' intention to use e-Government. Weerakkody et al. (2013) also claimed that trust plays a vital role in e-Government adoption. It is essential that e-Government service providers consider the importance of trust aspects when implementing such systems; also bearing in mind that it is very likely that the *PT* factor can be influenced by other factors such as *PB*, *AW*, *FQS*, *TQS* and *RP*.

5.4.4.2 The Regulations and Policies factor (RP)

With regards to the influence of implementing clear, applicable and visible *Regulations and Policies* on the adoption and use, the descriptive analysis showed a very positive impact of this factor. *RP* was measured with three items and their results can be interpreted as showing that *RP* is likely to be a very influential factor, see Table 5.21. The vast majority of the respondents assigned a very high importance to implementing different regulations, rules and policies that can reserve their rights, protect their data, make them confident and also control their online dealings with agencies.

Besides the importance and influence of the *RP* factor that was reported in the descriptive analysis, this influence was also investigated statistically using correlation tests. Thus, the relationship between *RP* and *Intention to Use* (*ITU*) was assessed utilising Spearman's correlation coefficient since neither variable's data was normally distributed. It was found that there is a statistically significant correlation between *RP* and *ITU* and this was positive correlation, $r_s = 0.308$, $n=416$, $p>.0005$. This supports the hypothesized relationship between the *RP* factor and *ITU* (H15a). Figure 5.26 below shows the trend line for this positive relationship.

H15a: There is a positive relationship between properly implementing regulations & policies and intention to use e-Government systems/services.

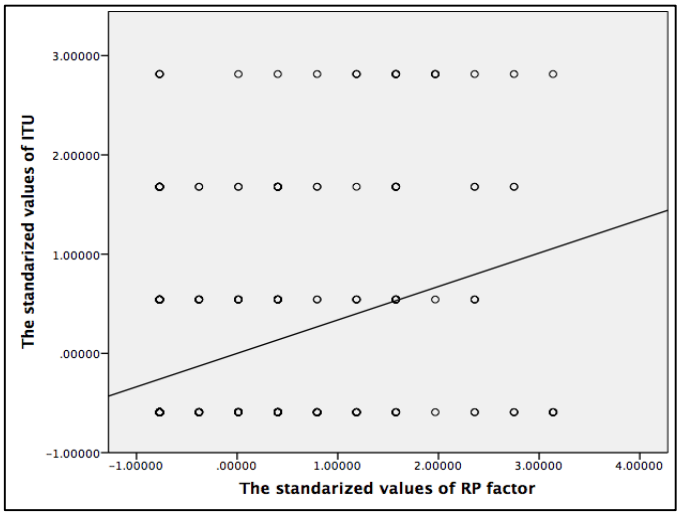


Figure 5.26: The relationship trend line between RP and ITU (citizens)

The findings from both analysis procedures (descriptive and statistical) revealed that implementing regulations, rules and policies properly is very important to citizens. The findings also showed it likely that the *RP* factor would increase the adoption and use of e-Government. Proper implementation involves making all regulations and policies clear, strict, applicable to all parties (users, employees and agencies), accessible, comprehensive and visible. The regulations and policies involved in online dealings are usually long and complicated; thus, providing them in a concise and understandable way would increase the probability of users reading them and thus, increase their trust, confidence and intention to use. This is especially important when providing online service to the public where there are different levels of education, different attitudes, different perceptions and different online use behaviour.

Although the findings showed a positive association between *RP* and *Intention to Use*, it did not show a positive association between *RP* and *Perceived E-Readiness* of e-Government systems. The correlation test found no positive relationship between these variables (*RP* and *PER*), r_s = -0.034*, n=416, p>.05.* This means that the implementation of regulations and policies for using e-Government services and transactions does not necessarily improve and increase citizens' perception about the readiness of e-Government systems. This result does not support the hypothesized relationship between *RP* and *PER* (H15b).

H15b: There is a positive relationship between properly implementing regulations & policies and Perceived e-Readiness of e-Government systems.

So we can conclude that the *RP* factor plays a vital role in citizens' intention to use online government services and transactions. Implementing rules, policies, terms and conditions of using e-Government systems is not sufficient, they also need to be presented in a way that encourages users to read and understand them; this would increase their confidence and in turn

their adoption and use. These strategies would also help to control online dealings, especially in national online systems, and minimize any possible misuse.

Most of the interviewees also supported the importance of this factor and its positive impact on citizens' adoption and use. One of them said *"Of course it is important and it would be influential, it is in favour of users and would preserve their rights"*. However, some associated the influence of this factor with certain issues. For example, one of the participants stated: *"... the presence of such regulations and policies must be beneficiary, not just extra procedures"*. Another said: *"The importance depends on what the regulations and policies are, if they are in the interest of the users, then for sure they would be positively influential"*. Moreover, the participants also commented on the length of such regulations and policies. One of them said*"... they need to be concise and clear because if they are long, similar to those on some other websites, I do not think that somebody would read them, people would agree on them if required and without reading them"*. Another participant stated that *"...I will read them if they are clear to the ordinary user and they do not include vague and complex phrases"*. Therefore, such regulations and policies need to be concise, clear and appropriate for all parties.

5.4.5 Perceived E-Readiness (PER) and Intention to Use (ITU)

In the proposed research model (EGAUM), there is a hypothesized positive relationship between *PER* and *ITU*. Both variables were proposed as dependent variables. The correlations between *PER* and other proposed factors such as *PS*, *TQS*, *ACC*, *PT* and *RP* were examined and only one positive relationship was found, which was between *PT* and *PER*. In this research, a positive relationship was also proposed between *PER* and *ITU*. This relationship has been assessed statistically utilising Spearman's correlation procedure. It was found from the correlation test that there was a positive relationship between the two variables, r_s=0.025*, n=416, p>.05.* Therefore, the hypothesized relationship (H16) was supported, although it was weak.

H16: There is a positive relationship between perceived e-Readiness of e-Government and intention to use e-Government systems/services.

The weak correlation between *Perceived E-Readiness* and *Intention to Use* was possibly because of the respondents' negative perception about the efficiency of the ICT infrastructure in Saudi Arabia and the ability of government agencies to implement satisfactory e-Government. This negative view can be improved by several factors, and the results of this study showed that one of them was Perceived Trust.

5.5. Conclusion

Table 5.22 summarizes all the hypothesized relationships between the EGAUM's constructs. It is clear that five factors were found to be the most significant in having positive and direct relationships with the citizens' intention to use e-Government systems and services. These factors are: *Perceived Benefits* (*PB*), *Socio-Cultural* (SC), *Functional Quality of Service/System* (*FQS*), *Perceived Simplicity* (*PS*) and *Regulations & Policies* (*RP*) (See Table 5.6.)

Table 5.22: Summary of the results of the hypothesized relationships in the citizens' sample.

Hypothesized relationship	Direction of relationship	Hypothesis test	Relationship strength
PB → ITU	**Positive**	**Supported**	**Moderate *(r_s = 0.378**) sig***
SC → ITU	**Positive**	**Supported**	**Moderate *(r_s = 0.380**) sig***
AW → ITU	Positive	Supported	Weak (*r_s = 0.206**) sig*
FQS → ITU	**Positive**	**Supported**	**Moderate *(r_s = 0.312**) sig***
PE → ITU	Positive	Supported	Weak *(r_s = 0.181**) sig*
PS→ ITU	**Positive**	**Supported**	**Moderate (r_s = 0.377**) sig**
PS→ PER	Negative	Not supported	Weak (*r_s = -0.133**) sig*
TQS → ITU	Positive	Supported	Weak (*r_s = 0.145**) sig*
TQS → PER	Negative	Not supported	Weak (*r_s = -0.251**) sig*
ACC → ITU	Positive	Supported	Weak (*r_s = 0.244***) sig
ACC → PER	Negative	Not supported	Weak (*r_s = -0.142**) sig*
PT → ITU	Positive	Supported	Weak (*r_s = 0.261**) sig*
PT → PER	Positive	Supported	Weak (*r_s = 0.180**) sig*
RP → ITU	**Positive**	**Supported**	**Moderate *(r_s = 0.308**) sig***
RP → PER	Negative	Not supported	Weak *(r_s = -0.034)*
PER → ITU	Positive	Supported	Weak (*r_s = 0.025)*

*. Correlation is significant at the 0.05 level. **. Correlation is significant at the 0.01 level.

It is suggested in this research that these five factors need to be considered carefully and sensitively to implement and provide successful e-Government systems and services based on citizens' perceptions and needs. This would lead to a higher and more satisfactory adoption and use level. This does not mean that the other proposed factors are not influential and important, but this research suggests that these five factors should have the highest priority. Recommendations on how to employ and benefit from the results of this study will be developed and presented in Chapter 8.

Chapter Six: Data analysis and discussion from the public employees' perspective

6.1 Introduction

This chapter presents and discusses the findings from the government employees' perspective. One of the main objectives of this research is to analyse and understand the factors that influence the adoption and utilisation of different e-Government users including the public employees at operational level who are involved in delivering government services and processing government transactions that are provided to customers. Analysing and understanding the employees' adoption and use would significantly contribute to the success of e-Government. This is due to the fact that the employees are involved in all e-Government domains including G2G, G2B, G2C and G2E: i.e. they are involved in delivering e-Services and processing e-Transactions to both citizens and businesses (G2C and G2B); and in the coordination and cooperation between different government departments to provide effective services to customers (G2G). Furthermore, they are the main target of implementing G2E where it provides them with several opportunities and benefits such as e-Training and e-Services that are related to their jobs. The total number of employees who participated in this research was 322 and there were 311 valid responses after data screening and preparation. According to the recent report that was published by the Ministry of Civil Service (2015), the number of public employees is around 392 thousand, including employees at operational level who were targeted for this sample. Based on the discussion about sampling in this research (see Chapter 4), the sample of government employees involved in this research is sufficient and representative. Furthermore, 8 government employees participated in the short semi-structure interviews that were conducted during the data collection process. The demographic data for this sample will be presented and discussed in the next section (Section 6.2). The findings from the descriptive analysis will be presented and discussed in Section 6.3. Section 6.4 will provide the results of the statistical analysis and the assessment of hypotheses alongside results from the semi-structured interviews. This chapter will conclude with section 6.5 that summarises the results and determines the most significant factors from the public employees' perspective.

6.2 Demographic data

The analysed data was collected by a specially designed survey entitled "Analysing key factors that influence the adoption and utilisation of government employees when using e-Government systems". The respondents were asked several questions to collect demographic data about them; such as gender, age, education level and proficiency of using computers. Moreover, they

were asked to respond to questions about their use of e-Government systems when processing customers' transactions and their opinions about such electronic systems. Table 6.1 below presents a summary of the demographic data for the government employees' sample.

For this sample, the data was collected from male participants only, for several reasons that were discussed in Chapter 4 and 5. Meeting female participants to collect data in person is difficult in Saudi Arabia due to religious and cultural reasons; moreover, female employees in government agencies work in separate offices and men cannot access these offices which are for female customers only. Thus, it is hard, if not impossible, for a male researcher to contact female employees to collect data from them in person; therefore, data for this sample was collected from male respondents, partly because of the aforementioned reasons and also because male employees dominate most of the government jobs concerned with processing transactions and services. According to the latest report about the Saudi labour force, around 16% of Saudi labour, including both private and public employees, are female while the rest (84%) are male (General Authority for Statistics, 2016b: p.15). Moreover, an article published by Al Arabiya, a well-known news agency in the Middle East, females actually only constitute 13% of the Saudi workforce (Al Arabiya, 2015). These statistics support the representation of the employees' sample in terms of male domination.

Table 6.1: Demographic data for the employees' sample

		Percentage (%)
Participants' age in years	18 – 30	25.4
	31 – 45	53
	46 – 60	21.5
Participants' education level	Secondary school or less	10.2
	Diploma	16.4
	Bachelor	56.9
	Master	15.7
	PhD	0.6
Nature of job	Management	27.9
	Data entering	13.8
	Customer service	27.9
	Import and export	1.2
	Finance and accounting	12.8
	Other	16

Participants' monthly salary in SAR (1 GBP ≈ 4.7 SAR)	5000 – 10000	33.7
	10001 – 15000	39.5
	15001 – 20000	15.4
	20001 – 250000	7
	More than 25000	4.1
Proficiency in using computers	Low	0.32
	Average	9
	Good	44.3
	Excellent	46.3
Internet use rate	Every day	89
	Several days a week	9.3
	Several days a month	1.2
	Several days a year	0.32
The use of e-Government systems in work	Yes	86.5
	No	13.5
The use of non-government online services	Yes	94.2
	No	5.8
Involvement in making decisions on customers' transactions	Yes	64.9
	No	35

Participants' age groups

In the first part of the survey, the participants were asked to provide some personal data such as their age group. Table 6.1 shows that around half of the participating employees (53%) were aged 31-45, a quarter of them (25%) were aged 18-30 and almost 21% of them were aged 46-60. In government agencies in Saudi Arabia, normally the employees who directly deal with and process customers' transactions are younger than 50. This is due to their abilities and proficiency in using computers and technologies for providing services and processing customers' transactions. This is clearly reflected in this sample, which suggests that it is representative in terms of age as the spread of ages matches those of Saudi public sector employees generally (General Authority for Statistics, 2016b: p.16).

Participants' education level

It is clear from Table 6.1 that the education level for the majority of the employees is a Bachelor's degree, i.e. 56% of the total participants. Around 16% of them hold a diploma, a similar proportion of them (15%) hold a Master's degree, and just over 10% have completed their public education (secondary school) or completed less schooling than that. A very low percentage (less than 1%) hold a PhD as jobs that involve providing services and processing transactions do not require such a high level of education. The overall education level of all

participants was as expected and reasonable for government employees who deal with e-Government systems in their jobs tasks and this also demonstrates that this sample is representative in terms of education level (General Authority for Statistics, 2016b: p.16).

Nature of employees' jobs

Information about the employee's job type was also collected to provide more accurate results when analysing the collected data. There were no personal questions that interfered with the employees' privacy, but rather a general question that determined the nature of their jobs. It is clear from Table 6.1 that the participating employees had different and varied jobs; which is another factor that suggests that the sample is representative of this group. The table shows that approximately 27% of the employees were in management and the same percentage were in customer service; 13% of the employees were in data entering and 12% in finance and accounting. The nature of the jobs held by the rest of the participants (16%) included customer relations, investigation and Information Technology (IT) services.

Monthly salary

The survey also collected data about the monthly salary that the employees earn from the government agency that they work for. This information has been collected because monthly salary is likely to influence the employees' intention to use electronic systems in their daily tasks related to customers' transactions. For example, there are some bonuses in the public sector that could influence employees' intention to use, such as the computer bonus which is granted to employees who specialize in IT/computer science or employees who mainly use computers in their work. Employees who interacted with customers face-to-face used to be granted a bonus in the past; and in the last couple of years there has been a debate about whether to re-grant it. It is likely that these bonuses could influence the employees' intention to use e-Government systems as their salaries would be affected when their jobs include/does not include using e-Government systems. It is also possible that the employees with low salaries could be affected as they might feel that such using computers needs more concentration than using papers and deserves an increase in salary. Table 6.1 shows that the monthly salary of around 39% of the participants is between 10,001-15,000 Saudi Riyals (SAR) while 33% of them receive between 5,000-10,000 SAR per month; 15% earn between 15,001-20,000 SAR, around 7% receive between 20,001-25,000 SAR and only 4% earn more than 25000 SAR as a monthly salary. The two salary categories, which are 5,000-10,000 and 10,001-15,000, are considered the actual average pay scale for government employees in Saudi Arabia, specifically for the kinds of job that involve processing government transactions (Ajel, 2016; and Alzamel, 2010).

Proficiency in using computers

Data about the employees' proficiency in using computers was collected as this information is crucial to this study because it is concerned with analysing the acceptance and use of electronic systems that relies on using computers. Table 6.1 clearly shows that the vast majority of the participating employees consider they have a high proficiency in using computers; and about 46% of the participants reported that their proficiency is excellent, 44% of them reported that their level is good, 9% of them thought it was average, and a very low percentage of them (under 1%) reported that their proficiency is low. From an analysis of these results, the participants who had some computer illiteracy were either seniors or had a lower education level than the other participants. Thus overall, high capability and proficiency in using computers is proportionate and consistent with education level.

Internet use rate

Some of the most important information collected from these participants was about their rate of Internet use in their daily lives; due to the possible impact of this on their adoption and willingness to use e-Government systems. Table 6.1 clearly presents an overall high rate of using the Internet, as it shows that 89% of the employees were daily Internet users. The results also show that about 9% used the Internet several days a week whereas very low percentages of the respondents reported that they used the Internet less frequently. It was found that employees who use the Internet less frequently were also either seniors or had a low level of education.

The use of e-Government systems

The employees were asked whether their jobs involve using e-Government systems for processing transactions. The overwhelming majority of the participating employees (86%) reported that they use electronic government systems to process customers' transactions, (see Table 6.1). Approximately 13% of them reported that their jobs do not involve the use of such electronic systems; probably because their departments have not transferred to electronic systems or their jobs do not involve the use of such systems. Exploring and understanding the factors that influence employees' adoption and intention to use, in terms of whether or not they are currently using e-Government systems will significantly help to enhance and improve the current and the planned electronic systems in government agencies as well as helping to achieve better and satisfactory adoption and utilisation.

The use of non-government online services

Information about the use of daily online services including online banking and online purchases was also collected. Such use was proposed to have impact on the employees' adoption and use of the electronic systems in processing transactions as part of their jobs. As shown in Table 6.1, the majority (94%) of the respondents have used non-government online services, whereas only 5% have not. This indicates that most of the respondents are accustomed to using online services in their daily life; and this is part of their frequent use of the Internet.

Employees' job responsibilities

Besides knowing whether the employees' jobs involved the use of e-Government systems or not, the survey also collected information about their responsibilities in terms of making decisions about customers' transactions. This aspect also could have an impact on their adoption and use of the electronic systems in their work, as the implementation of e-Government could grant employees more authority or reduce their responsibilities. It is clear from Table 6.1 that more than 64% of the employees have the authority to decide about customers' transactions whereas 35% do not have such authority. It is important to explore and understand how government employees' perceptions about the impact of e-Government on their authority and responsibilities may influence their acceptance and use of it.

6.3 Descriptive analysis of the proposed factors from the public employees' perspective

Each proposed construct is investigated and analysed in detail in this section. Several items were involved in measuring the influence of each factor using a 5-point Likert scale. These items will be presented in each section of the factor analysis; and the composite score for each factor will be used to interpret the results. Detailed information about the response frequencies, mean, median, standard deviation and Inter-Quartile Range values are presented in Appendix B.

Perceived Benefits (PB)

The influence of the *Perceived Benefits* (*PB*) factor was measured with five items in this sample. The measurement of the influence of the *PB* factor in this sample was not only concerned with the benefits that employees would individually gain from utilising e-Government, but also considers the impact of perceived benefits for their government agencies. It is suggested that implementing e-Government systems would benefit government employees in terms of enhancing their productivity and speeding up the completion of their tasks. It was also proposed that e-Government would benefit the government agencies and organisations in

terms of increasing their employees' commitment to work and self-monitoring. Therefore, the impact of perceiving benefits that e-Government could provide for both the government agencies and government employees are considered in this analysis. Table 6.2 presents the items involved in measuring the influence of *PB* and Figure 6.1 shows the results for these items:

Table 6.2: The PB factor measured from the employees' perspective

Construct	Item code	Measure
Perceived Benefits	PB1	Using EGOV systems would enable me to process customers' transactions quicker than paper based ways.
	PB2	I think using EGOV systems in my job would enhance my productivity.
	PB3	I believe that using EGOV systems would increase employees' commitment to work.
	PB4	I believe that using EGOV systems would increase employee's self-monitoring.
	PB5	Electronic dealing between government agencies would speed up the processing of customers' transactions.

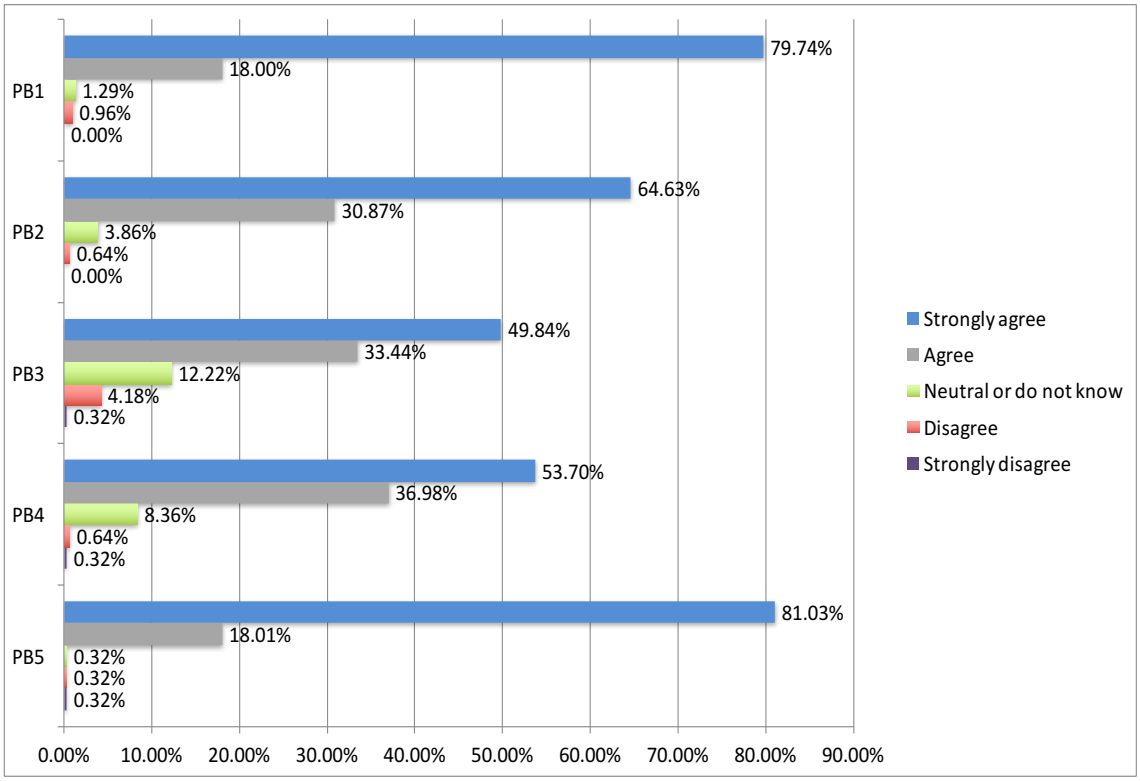


Figure 6.1: The results of PB measurement items (government employees)

In item PB1, the employees were asked to determine whether using e-Government systems would enable them to process customers' transactions more quickly than if using the traditional paper-based ways. The vast majority (97%) of them agreed with the statement, whereas less than 1% of them disagreed. The Likert score of 1.23 indicates a very high agreement about this perceived benefit and also reflects the importance of achieving this benefit. Although implementing electronic methods in the agencies' processes could significantly speed up the

completion of transactions, they could also slow down and complicate the agencies' processes if they are not implemented or conducted successfully. For example, some government agencies in Saudi Arabia are still using paper in many of their processes, although the electronic transformation of these processes is under way. This increases the workload on the employees, slowing their productivity and reducing their performance; therefore, achieving the proposed benefit of enabling quicker processing would significantly increase the employees' adoption and acceptance of using e-Government systems.

The employees were also asked to respond to a statement "I think using e-Government systems in my job would enhance my productivity" (item PB2). Figure 6.1 shows that agreement with this statement was very high. The overwhelming majority (94%) of participants agreed with the proposed statement whereas less than 1% disagreed giving a Likert score of 1.40. This means that the participating employees had a very positive perception about the ability of e-Government systems to improve their performance and productivity. This is possibly because of several reasons: for example, the electronic systems, if they were implemented well, would enable the employees to achieve and process more tasks than with traditional ways and this would positively reflect on their productivity. Moreover, employees' performance can be logged and reviewed electronically. This means any bonuses due for good productivity could be accurately calculated.

Regarding the employees' views of item PB3 that states, "I believe that using e-Government systems would increase employees' commitment to work", Figure 6.1 shows that most of the respondents (82%) agreed (from "Strongly agree" to "Agree"), while 4% disagreed (from "Disagree" to "Strongly disagree"), and 12% were neutral in their answers or they did not know. The Likert score of 1.71 indicates that the majority was positive about the ability of e-Government systems to enhance employees' commitment to work in the public sector. Commitment to work includes a commitment to completing the required tasks and processing the e-Transactions that are assigned on time. This commitment to work would benefit both parties, namely, the employees and the government agency that they work for.

Figure (6.1) also shows that 89% of the employees believed that using e-Government systems in the public sector would increase their self-monitoring (Items PB4). This would definitely increase and improve the overall performance of government agencies. The figure also shows that a very low percentage of the employees (less than 1%) disagreed and 8% were neutral. The Likert score of this item (1.56) revealed a very positive perception about the ability of e-Government to increase the employees' self-monitoring. Using e-Government systems would facilitate reviewing the employees' performance and productivity and encourage them to self-review their work. Such systems could also grant them more authority and responsibility as well

as offering more opportunities to involve them in making decisions. All of these aspects can be offered through using e-Government systems and are important in increasing the employees' self-monitoring.

In respect of item PB5 that states, "Electronic dealing between government agencies would speed up the processing of customers' transactions", Figure 6.1 shows that the vast majority (99%) of the employees agreed (from "Strongly agree" to "Agree"), giving a Likert score of 1.20. The results show how it is important to electronically connect different agencies together to achieve one of the main goals of implementing the e-Government systems, which is the fast processing of customers' transactions.

The computed composite score of the *PB* factor is 1.42, and this demonstrates its positive impact on the adoption and acceptance of the government employees when using e-Government systems in their work. If employees perceive and experience such proposed benefits when implementing e-Government systems, this could reduce technology resistance and negligence in some government departments. The result of the computed composite score for this factor was tested to detect any possible outlier cases and only one outlier case was found. The score was reproduced omitting the detected outlier case to assess the impact of outliers on data. There was no strong impact from the detected outlier case, as the composite score only changed to 1.41. Thus, all data will remain for this stage of the analysis.

The Socio-Cultural (SC) factor

It was proposed that the adoption of e-Government systems is influenced by different *Socio-Cultural* aspects, and nine items were developed to measure the influence of these aspects. These aspects involved technology resistance, the influence of others, the influence of self-image and also cultural concerns and beliefs. All these aspects are likely to influence the employees' adoption and use of e-Government systems in their jobs. All the items involved in the *SC* measure are listed in Table 6.3 and their results are demonstrated in the combined graph (Figure 6.2).

Table 6.3: The SC factor measured from the employees' perspective

Construct	Item code	Measure
Socio-Cultural	SC1	Using EGOV systems in my job would make me feel that I am more sophisticated.
	SC2	Using EGOV systems in my job would enhance others' perceptions about me (my colleagues, my friends and my family).
	SC3	I would be eager to use EGOV systems in my job if my colleagues were using them.
	SC4	I prefer dealing with customers face-to-face more than dealing with them electronically through EGOV systems.

SC5	I believe that implementing EGOV systems would reduce job opportunities in the public sector.
SC6	Transforming to EGOV in the public sector makes me feel that I will lose my job one day.
SC7	Processing transactions using EGOV systems and computers would make my job boring.
SC8	Using EGOV systems would reduce my job privileges such as making decisions about customers' transactions.
SC9	I feel that using EGOV systems in my job would put me under pressure (as my performance can be monitored).

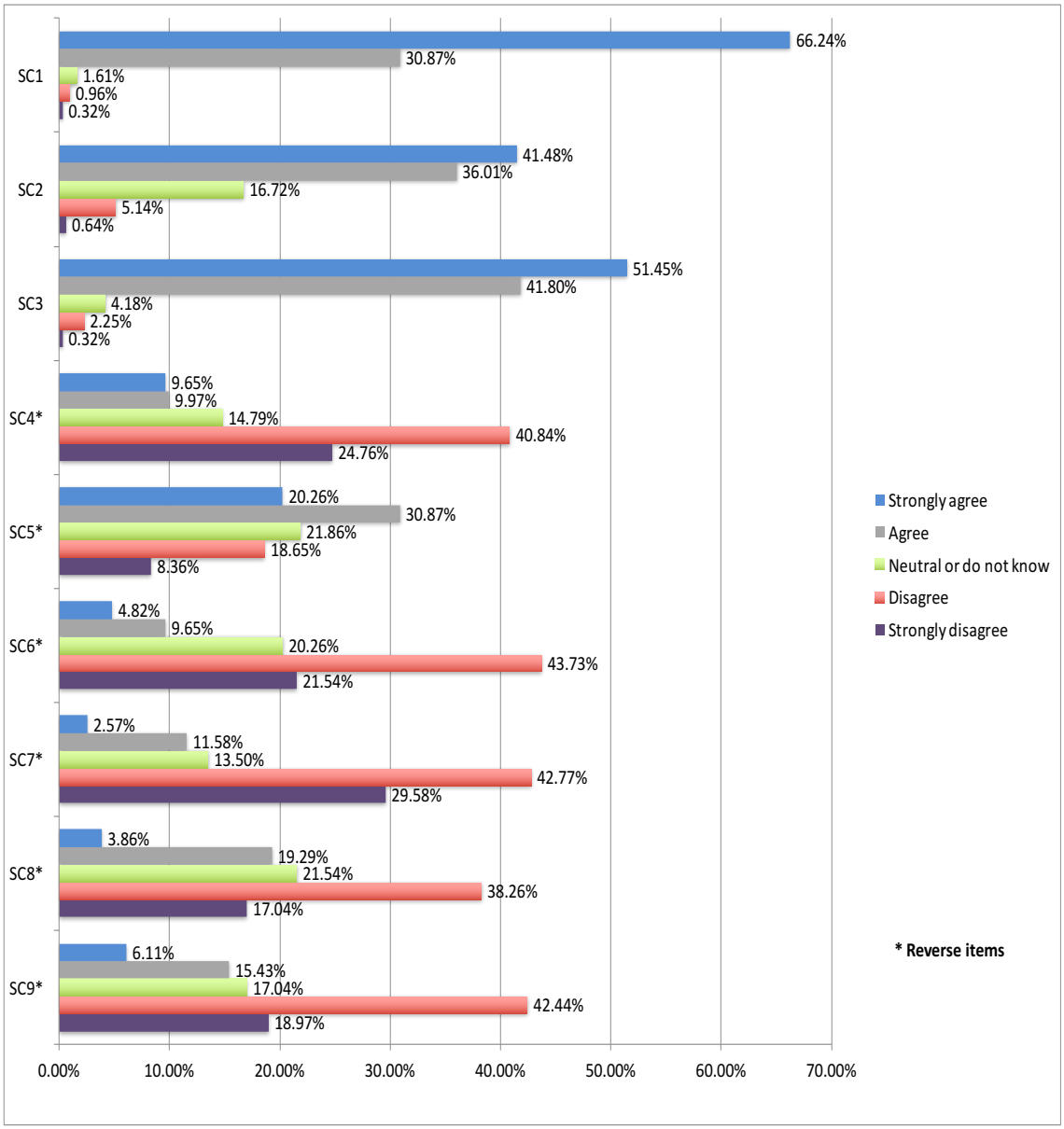


Figure 6.2: The results of SC measurement items (government employees) (see appendix G for larger graph).

Item SC1 asked the participants whether the use of e-Government systems in their job activities would make them feel more sophisticated. The overwhelming majority (96%) agreed with that while a very small percentage of 1% did not feel that. The Likert score for this item is 1.38 which indicates that it is very likely that this cultural aspect would have a strong impact on the employees' adoption and acceptance of e-Government.

The respondents were also asked to indicate their view regarding item SC2 that states "Using e-Government systems in my job would enhance others' perceptions about me". The others here were identified as colleagues, family members and friends. Figure 6.2 shows that over three quarters (77%) of the employees agreed with the statement whilst 16% were uncertain and only about 5% disagreed, giving a Likert score of 1.87. The results indicate a high agreement amongst the participating employees on the positive influence of others' views when using e-Government systems in their jobs activities.

Also with regard to the influence of others, the employees were asked in item SC3 to determine whether the use of e-Government systems by their colleagues would have an influence on their use of such systems (make them enthusiastic and eager to use them). A high percentage of the employees (92%) agreed about such influence while a small proportion of them disagreed. The total score for this item was 1.58 and this also indicates a possible strong impact from others, specifically colleagues.

Another cultural aspect, that was proposed to have impact on the employees' adoption and use, is the culture of face-to-face dealings. This cultural aspect might cause resistance to using technologies and electronic systems in the public sector. Thus, the employees were asked to respond to item SC4 that states: "I prefer dealing with customers face-to-face more than dealing with them electronically through e-Government systems". 'Dealing with them' here refers to direct dealings that involve instant responses or indirect dealings which involve processing their e-Transactions. Figure 6.2 shows that approximately 64% of the respondents did not prefer face-to-face dealings with customers. The graph also shows that 19% did prefer such physical interaction and about 14% were uncertain. The Likert score for item SC4 was 3.61 and this means the majority preferred the electronic dealings with customers and conducting transactions through e-Government systems.

In respect of the statement (item SC5) "I believe that implementing e-Government systems would reduce job opportunities in the public sector", Figure 6.2 shows that almost half the employees (51%) agreed with the statement, about 27% of them disagreed and 21% were uncertain. The percentage of the employees thus concerned about the reduction of employment opportunities was relatively high. However, the Likert score for this item was 2.63 which

indicates that the respondents were also uncertain about this concern. These results indicate that this cultural concern should be carefully considered, as it is generally believed that this could increase technology resistance and therefore low adoption and acceptance.

In addition to the relatively wide belief that implementing e-Government systems would decrease employment opportunities in the public sector; the employees were asked in item SC6 whether they were concerned about losing their jobs when electronic methods were introduced to process government transactions. Figure 6.2 shows that approximately 65% of the participants are not concerned about losing their jobs through e-Government system implementation. Around 14% of them reported that they are concerned about losing their jobs, while 20% were uncertain. The Likert score of 3.67 indicates that this belief was not prevalent amongst the participating employees. Although the belief about general employment opportunity reduction reported in item SC5 was relatively high, the majority of the employees believed that implementing e-Government systems in the public sector would not contribute to the dismissal of current government employees.

Moreover, Figure 6.2 shows that 72% of the respondents disagreed that using computers and e-Government systems for all processes and tasks would make their jobs boring (item SC7). It also shows that 14% of them agreed with the proposed statement and 13% were uncertain. The Likert score for this item was 3.85 and this indicates that the majority would not mind only using computers in their jobs activities when all processes were transformed to electronic government systems.

Concern about possible reduction of job privileges and responsibilities that might be caused by implementing e-Government systems was also proposed as one of the influential SC aspects. Thus, the employees were asked in item SC8 whether they believe that using e-Government systems would reduce their job privileges, such as making decisions about customer transactions. Figure 6.2 shows that more than half of the respondents (55%) disagreed this would happen, while 23% agreed. About 21% of them responded with “Neutral or do not know”. The concern about losing privileges and responsibilities because of using technology is a cultural matter and it is thought to have an influence on the adoption and utilisation of this technology. The privileges and responsibilities here include the ability to make decisions about customers’ transactions, the ability to control/change the workflow process and flexibility in processing transactions. The Likert score for this item was 3.45 and this indicates that this belief was not dominant amongst the participating employees.

Regarding the respondents’ view of item SC9 “I feel that using e-Government systems in my job would put me under pressure; as my performance can be monitored”, Figure 6.2 shows that

61% of the respondents disagreed with the proposed statement, while 21% agreed and 17% were neutral in their answers. The Likert score was 3.52, which indicates that the majority would not feel pressured by monitoring when using e-Government systems in their jobs.

The composite score for the *SC* factor was 2.32, and this score indicates that this factor is likely to influence the employees' adoption and utilisation when implementing e-Government systems in the public sector. The measurement of the impact of this factor involved different social and cultural aspects. No outlier cases were detected when assessing this factor's data. The correlation between the *Socio-Cultural* factor and employees' intention to use e-Government systems will be investigated statistically later in Section 6.4. The results of the statistical analysis, alongside the descriptive analysis, will determine whether the hypothesized positive influence of *SC* is supported or not and will also determine the strength of this influence.

The Awareness (AW) factor

The influence of the *Awareness* factor was measured with three items for this sample. They concern how employees' awareness and training would affect their acceptance and intention to use e-Government systems in their jobs. Table 6.4 and Figure 6.3 below show the measured items alongside their results. Each item will be discussed in the following paragraphs:

Table 6.4: The AW factor measured from employees' perspective

Construct	Item code	Measure
Awareness	AW1	I feel that I have a good knowledge about the benefits and advantages of using EGOV systems in my job.
	AW2	I believe that a low level of employee awareness about EGOV potentials would reduce their willingness to use its systems in their jobs.
	AW3	Not providing enough training on how to use EGOV systems in work would reduce employees' willingness to use them.

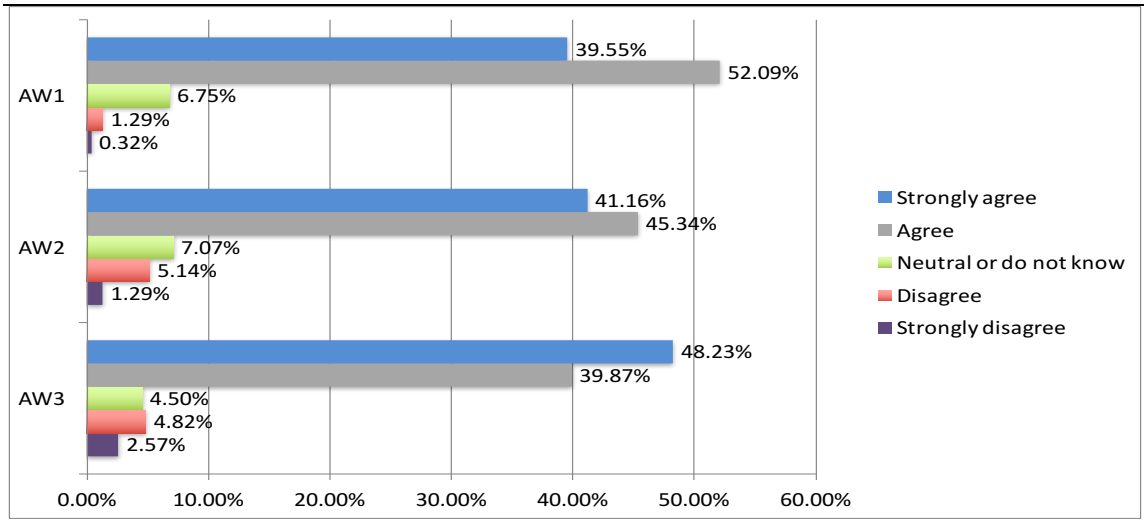


Figure 6.3: The results of AW measurement items (government employees)

Item AW1 asked the respondents whether they feel that they have a good knowledge about benefits and advantages of using e-Government systems in their jobs; and it is assumed they would be able to judge their knowledge from their performance and productivity when processing government transactions. Figure 6.3 shows that the majority of the employees (91%) agreed with the statement for item AW1 and the Likert score of 1.70 indicates a high awareness about what benefits that e-Government systems could provide for public sector work. It is very likely that this awareness about e-Government systems' potential came from their experience and use rather than awareness campaigns and initiatives, since a large proportion of participants (46%) reported that they did not receive enough training and their organisations did not provide enough awareness workshops (see Figure 6.4). This indicates a shortcoming in improving employee awareness, which might negatively affect their adoption and acceptance. This is clearly reported in the responses for the next item (item AW2).

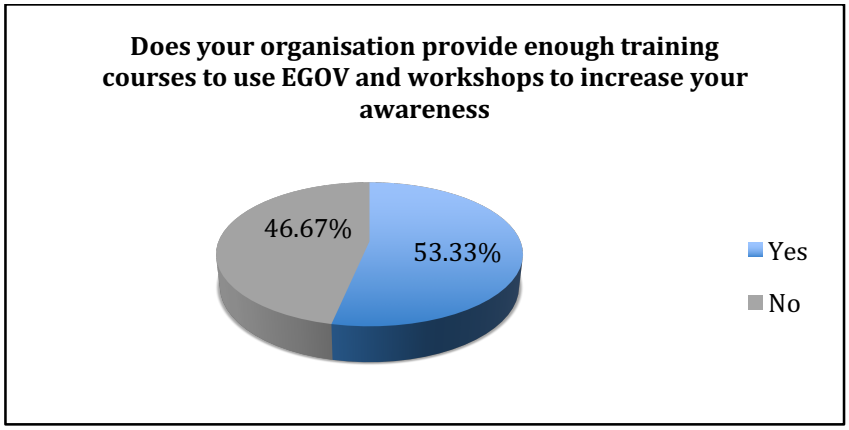


Figure 6.4: The employees' awareness and training

When asked to react to the statement in item AW2: "I believe that a low level of employees' awareness about e-Government potentials would reduce their willingness to use its systems in their jobs", it is apparent from Figure 6.3 that the vast majority of the respondents (86%) agreed with the proposed statement whereas only 6% did not agree. The Likert score of 1.80 suggests that employees' awareness level about the benefits and advantages of using e-Government systems is believed to play a vital role in their willingness and acceptance to use such systems.

Moreover, providing sufficient training to the employees on how to use and deal with e-Government systems is considered to be a very important part in improving employee awareness (item AW3). As shown in Figure 6.3, a large proportion of the participating employees (88%) agreed that not providing enough training on how to use and benefit from the implementation of e-Government systems would reduce willingness to use them. It also shows a low percentage of employees (7%) who did not agree with this statement. The Likert score for

this item was 1.73 and this result indicates a belief in the significance of training personnel who are required to deal with such electronic systems in processing customers' transactions.

The results of all the *AW* items clearly revealed that the *Awareness* factor significantly influences employees' adoption and intention to use e-Government systems in their jobs. The composite score for this factor was 1.74 and this reflects its high importance and level of influence. Training is not the only important aspect in this factor, as awareness about the potentials and advantages of implementing e-Government systems that benefit both employees and their organisations is also a fundamental aspect. The composite score was assessed and tested in order to detect any influential outlier cases. Two outliers were detected and the new score was 1.73 indicating a very low impact.

The Functional Quality of Service/System (FQS) factor

The *FQS* factor was measured with six items and all of them concerned the impact of functional aspects, which reflect the quality of e-Government systems, on employees' adoption and intention to use such systems. Table 6.5 lists all the measure items and the combined graph presented in Figure 6.5 shows the results.

Table 6.5: The FQS factor measured from employees' perspective

Construct	Item code	Measure
Functional Quality of Service/System	FQS1	I feel that the EGOV system in my organisation is of high quality.
	FQS2	Using EGOV systems would improve my performance quality in processing customers' transactions.
	FQS3	I think that using EGOV systems would prevent job mistakes that might occur with traditional paper work.
	FQS4	I think that the Saudi postal mail services are fast and reliable for correspondence with customers.
	FQS5	I think the SADAD system is sufficient and effective to be used with customers' payments for their transactions.
	FQS6	I would be happy for customers to evaluate my job performance when processing their transactions.

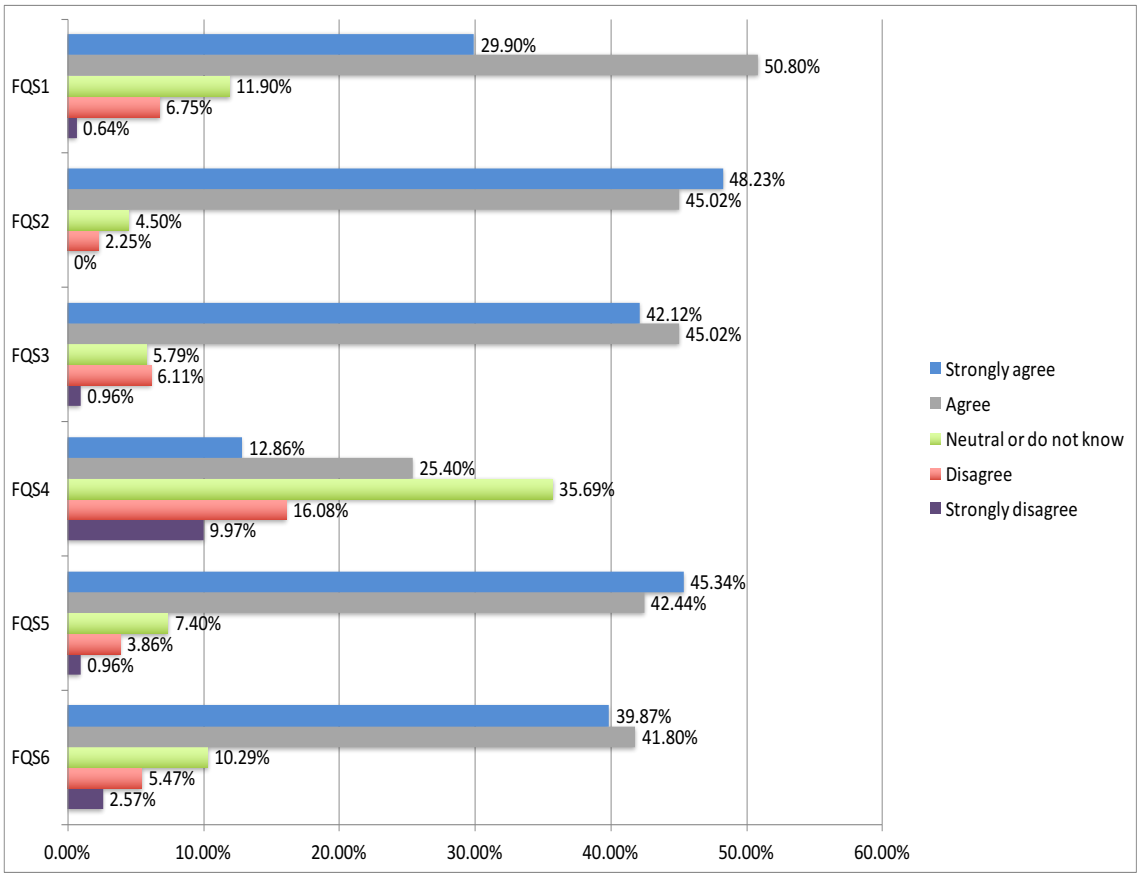


Figure 6.5: The results of FQS measurement items (government employees) (see appendix G for larger graph).

The results for item FQS1 show that a large percentage of the surveyed employees (80%) felt that the e-Government system in their organisations is of high quality. This is clearly presented in Figure 6.5. The graph also shows that 11% of them were uncertain and 7% disagreed with the statement. The Likert score for this item is 1.97 indicating that the employees' perception about the quality of the implemented system in their agency is positive. It is also clear from Figure 6.5 that the overwhelming majority of the respondents (93%) had a positive perception about the ability of e-Government systems to enhance the quality of their performance and productivity (item FQS2). A very low percentage of them (2%) disagreed with the statement and only 4% were neutral. The total score for this item is 1.60 and this shows a positive perception about the ability of e-Government to enhance the quality of employees' work.

One of the functional abilities that successful e-Government systems can provide is minimizing processing mistakes that usually occur with the traditional paper-based methods. Achieving this reflects the functional quality of the implemented e-Government systems. Thus, in item FQS3 employees were asked whether they believe that using e-Government systems would really reduce job mistakes. The results revealed that 87% of them agreed it would, while only 7% disagreed, giving a Likert score of 1.78. This indicates that using such systems was perceived to

enhance the functional quality of the work and the provided services. It is likely that this perception would positively affect employees' adoption and acceptance to use e-Government systems.

One of the functional aspects that reflect the quality of the implemented e-Government is the correspondence between government agencies and customers. The quality of methods used for such correspondence was proposed to influence adoption and use. When the employees were asked in item FQS4 to indicate their view of the statement "I think that the Saudi postal mail services are fast and reliable for correspondence with customers", around 38% of them agreed whilst 26% disagreed, and 35% were neutral or did not know. The Likert score of 2.84 indicates that the participating employees were uncertain about whether the Saudi postal mail services are a fast and reliable adjunct to e-Government systems. This is possibly because the postal mail services are not as effective as they should be in Saudi Arabia. Although the postal mail services are not implemented well in Saudi Arabia, particularly for government services, it is worthwhile to know the employees' perceptions about such services and how this would affect their adoption and intention to use.

The payment method is also one of the functional aspects that were proposed to affect the adoption and use of e-Government. The quality of the payment method is very likely to influence the employees' intention to use e-Government systems as receiving payments from customers is one of the requirements of processing customers' transactions. Since the SADAD system is the only payment system for the public services in Saudi Arabia, item FQS5 asks employees for their views about its sufficiency and efficiency. Figure 6.5 shows that the majority (87%) agreed that using the SADAD system is sufficient and effective to be used for customers' payments for transactions. It also shows that low percentages disagreed (4%) or were uncertain (7%). The Likert score was 1.72 and this means that most of the participating employees were satisfied with this payment method.

Regarding the respondents' view of the statement in item FQS6 "I would be happy for customers to evaluate my performance when processing their transactions", Figure 6.5 shows that over three quarters of the employees (81%) were happy, while only 8% were not. Enabling customers to assess and evaluate the employees' performance is also one of the functional aspects related to the quality of service. This might enhance the adoption and use of all beneficiaries, including employees, as this evaluation could be used in their performance assessment and bonus eligibility. The Likert score for item FQS6 was 1.89 and this indicates that this aspect of functional quality of service would be likely to influence the employees' adoption and intention to use e-Government systems in their jobs.

The composite score for all items involved in measuring the influence of the *FQS* factor is 1.97. This score indicates a positive influence of the *FQS* factor on employees' adoption and intention to use e-Government systems, as they have an overall positive perception. The developed items looked at the functional quality of service/system from different angles to provide a better view about the importance and impact of this factor. An outlier detection test was performed and there were two detected cases. The composite score after omitting the detected cases is 1.95, indicating no significant impact.

The Previous Experience (PE) factor

There are two items involved in measuring the influence of the *Previous Experience* on the employees' adoption and intention to use e-Government systems (see Table 6.6). These are Likert-type items with two different measurement scales; thus, the Median (*Md*) and Inter-Quartile Range (*IQR*) will be used in the descriptive analysis. Both items were dependent on prior items. This means that the employees whose jobs do not involve the use of e-Government systems will be omitted in this factor' analysis. Moreover, the measurement of the *PE* factor also involved measuring the influence of the previous experience of other (non-government) online services such as online banking and online purchases. Thus, employees who have not used such online services in their daily lives will also be omitted. The omitted cases amounted to 41 cases for item PE1 and 18 cases for item PE2.

Table 6.6: The PE factor measured from the employees' perspective

Constructs	Item code	Measure
Previous Experience	PE1	How do you rate your experience of using EGOV in your job to process customers' transactions in general?
	PE2	Will previous experience of performing online transactions in your daily life affect your willingness to use EGOV in your job?

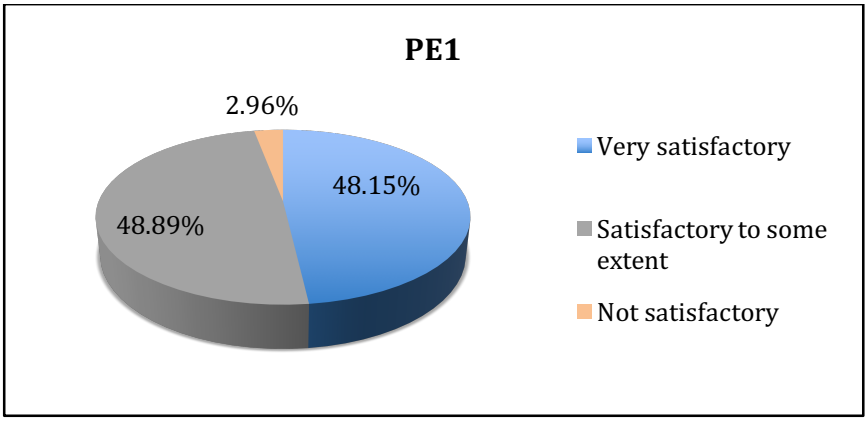


Figure 6.6: The result of item PE1 (government employees)

In item PE1, the respondents were asked to rate their previous experience of using electronic systems when processing transactions. Figure 6.6 shows that 48% of the respondents were very satisfied with using e-Government systems in their jobs; slightly more (around 49%) were satisfied to some extent and very few (3%) were not satisfied at all. The median for this item was *Md* = 2 which means that the larger number were not fully satisfied. Although the satisfaction rate was high, the proportion of employees who had reasons that made them not fully satisfied was slightly higher. Data about the different reasons that negatively affected their previous experience were also collected and presented in Figure 6.7 below:

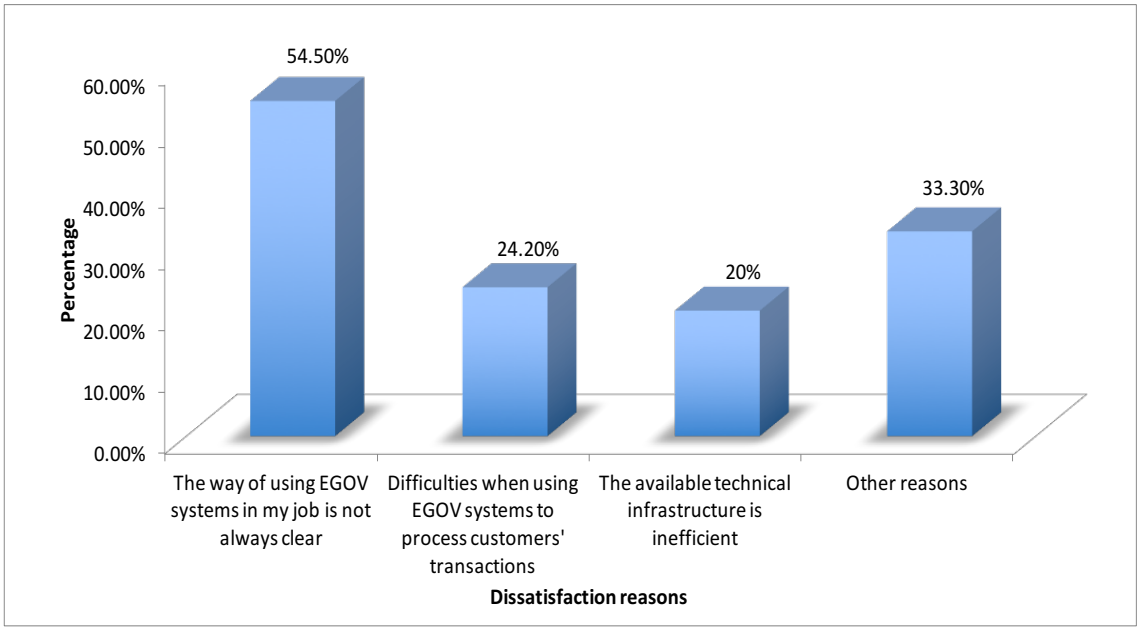


Figure 6.7: Dissatisfaction reasons for e-Government use (government employees' sample)

Several reasons were presented for the employees to choose from. It is clear from Figure 6.7 that more than half the respondents (54%) found the way of using e-Government systems in their jobs was not always made clear. This is very possibly because of the lack of training and awareness by their organisations. As stated earlier in the analysis of the *AW* factor, about 46% of the participating employees did not receive enough training and workshops to increase their awareness and improve their skills in using such systems. Some employees reported that they always asked other employees who had more experience to help them with the use of systems. It is very likely that this reason of being unclear about how to operate the system would negatively influence their adoption, acceptance and intention to use. Moreover, around 24% of the employees who were using e-Government systems in their work reported that they faced difficulties when using such systems for processing transactions. These difficulties possibly include the complexity of processing procedures, slowness of the systems network and other technical issues. These difficulties would also cause a negative impact on the employees'

adoption and intention to use. The available technical infrastructure was also one of the reasons that made the employees not fully satisfied; and the inefficiency of aspects including computers, Internet connection and network would adversely affect adoption and utilisation levels.

Other crucial reasons were also reported by about 33% of the participating employees. For example, many of the provided e-Services are partially electronic; meaning that part of the transaction processing is electronic and the other part is manual. This is likely to increase the workload and complexity rather than enhancing and speeding the transaction process. A number of employees reported that they are required to complete customers' transactions manually using paper and traditional forms. Frequent systems faults were also reported by several employees. These faults usually take time to be solved and this would slow the transaction processing and cause disruption to work. The complexity of procedures required when processing customers' transactions was also reported by a number of employees. Additionally, other reasons for dissatisfaction such as the unavailability of dedicated technical support, low quality of the implemented systems, inability to correct unintended mistakes and not having the required authority were reported. All these reasons are significant and need to be considered if e-Government systems that benefit all the intended stakeholders are to be successfully implemented.

With regards to the use of non-government online services, the results indicate that the majority of employees (94%) have accessed such services in their daily lives. Since the previous use of these online services was proposed to have an influence on the use of electronic government systems, item PE2 ask participants how such online use would affect their willingness to use e-Government systems in their work. It is apparent from Figure 6.8 below that about three quarters of the participants (75%) stated that the use of non-governmental online services in their daily lives would positively affect their willingness to use e-Government systems in their work. It is likely that such use enhances the employees' perception about using e-Government systems. The results also show that 23% of the employees stated "No effect" of such use on their willingness to use e-Government systems. Only 1% of them found that the use of online services would negatively influence their intention to use e-Government.

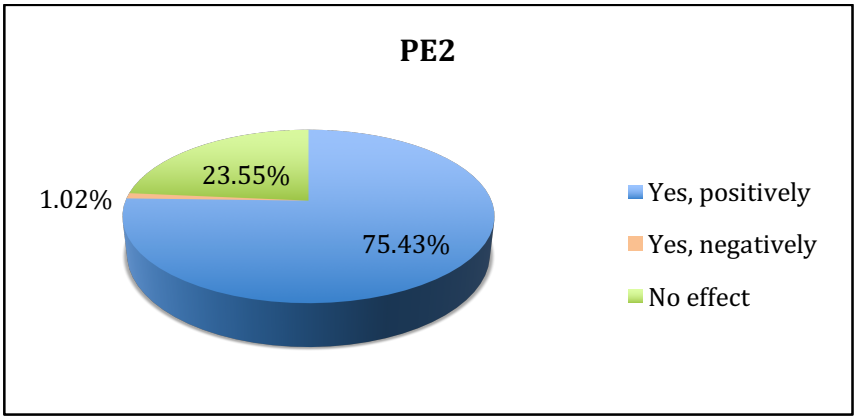


Figure 6.8: The result of item PE2 (government employees)

The median value of this item is *Md* = 1 indicating that the majority had a positive experience of performing online and electronic services in their daily lives. The results also revealed that their adoption and intention to use electronic systems in their work would be positively affected by the use of non-government online services.

The Perceived Simplicity (PS) factor

The influence of the *PS* factor was measured with four items using a 5-point Likert scale. These items were developed to find out whether the perceived simplicity would have a positive impact on the employees' adoption and intention to use e-Government systems in their work. Table 6.7 below presents all the items involved in measuring the impact of this factor and Figure 6.9 demonstrates the results.

Table 6.7: the PS factor measured from the employees' perspective

Construct	Item code	Measure
Perceived Simplicity	PS1	I feel that using EGOV systems to process transactions is easier than using a paper-based method.
	PS2	Providing a help desk that is dedicated to help employees with processing and using EGOV is important for me.
	PS3	Providing an electronic manual about steps and procedures of processing transactions would make my work on EGOV easier.
	PS4	I believe that providing illustrative examples of e-Transactions' requirements would facilitate their processing.

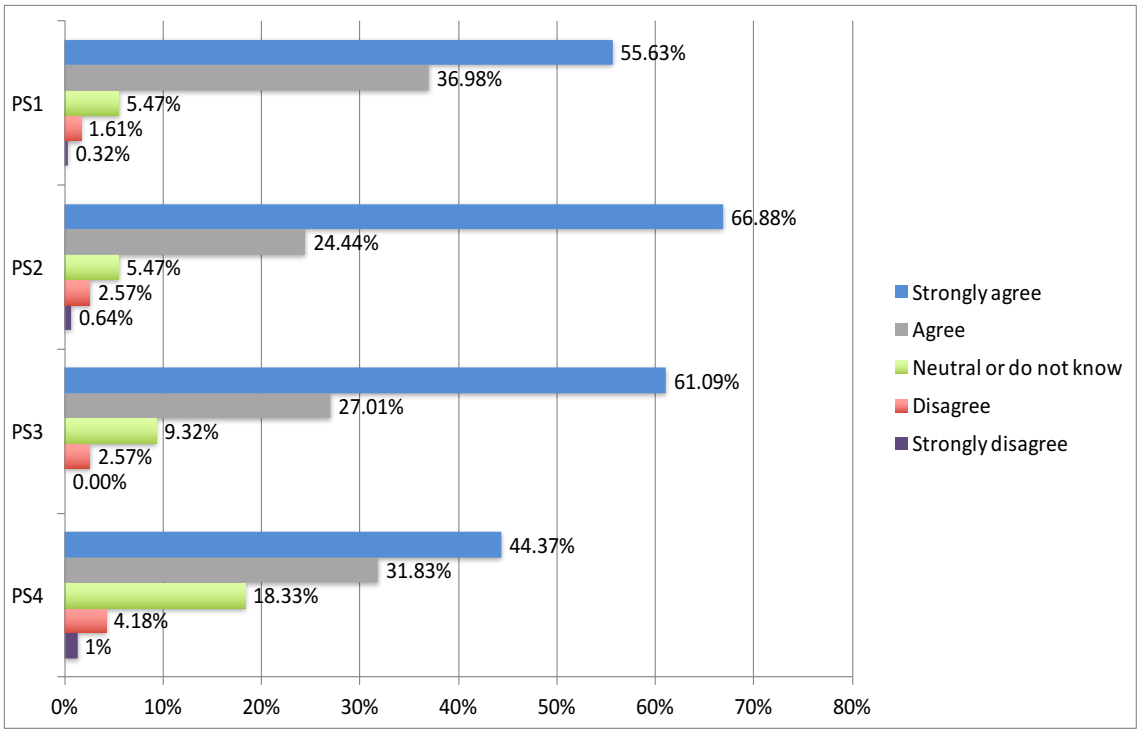


Figure 6.9: The results of PS measurement items (government employees)

The respondents were asked in item PS1 to indicate their views about the statement "I feel that using e-Government systems to process transactions is easier than using a paper-based method". As shown in Figure 6.9, the vast majority (92%) of the participating employees agreed, with a very small number (2%) disagreeing and only 5% neutral about the statement. The Likert score of 1.54 shows that the respondents found that using e-Government systems when processing customers' transactions is much easier than using a paper-based method. This does not mean that the majority have used successful electronic systems. This high agreement reflects their perception about the simplicity that using e-Government would offer them. This item was developed to measure the influence of this factor because many government agencies in Saudi Arabia have implemented e-Systems that do not enhance and speed up transaction processing. Some implemented e-Systems have made the processes more complex; for example, using both electronically-based and paper-based methods in many processes and procedures reduces the efficiency of implementing e-Government systems. Several employees reported this issue when asked for reasons that made them unsatisfied with using e-Government systems (see analysis of the *PE* factor).

In item PS2, the majority of the employees (91%) agreed on the importance of providing a help desk dedicated to assisting them with processing and using e-Government systems in their work, (see Figure 6.9). A very low proportion (3%) of the respondents disagreed and only 5% were uncertain. The total score for this item was 1.45, indicating the need for a dedicated support department that facilitates the use of e-Government systems in government agencies.

The importance of providing such support does not only apply in the first stages of implementing e-Government systems, but rather the employees would be likely to need such support and help all the time the agency used electronic systems in their services and transactions. As e-Services continue to be implemented and improved, requirements and processes change accordingly and employees need help to keep pace.

As shown in Figure 6.9, about 88% of the participants agreed with item PS3 that states "Providing an electronic manual about steps and procedures of processing transactions would make my work on e-Government systems easier". Only 2% of them disagreed and 9% were neutral. The Likert score is 1.53, indicating a positive perception about providing an electronic manual of the required steps and procedures when processing transactions. A number of employees reported that they usually ask other employees who had more experience than them, about steps and procedures for processing transactions electronically. Thus, the results revealed that providing such an electronic manual was thought to make use easier.

Different e-Services require different documents and requirements from customers. In many cases, government employees need to make sure that all the provided documents are correct to process the e-Transactions. Therefore in item PS4, employees were asked their view about the statement "I believe that providing illustrative examples of the e-Transactions' requirements would facilitate their processing". Figure 6.9 shows that approximately three quarters of the respondents (76%) agreed with the proposed statement while only 5% disagreed. The Likert score of 1.86 indicates a general agreement on the positive influence of providing examples of e-Transaction requirements.

The composite score of 1.59 indicates that it is very likely that this factor has a positive influence on employees' adoption and intention to use e-Government systems in processing customers' transactions. It also shows how important it is to make such use clear and simple for all employees involved. When testing the composite score to detect outlier cases, three outliers were detected. However, these outliers are included in this descriptive analysis as the new composite score of 1.57 did not have a significant impact on the result.

The Technical Quality of Service/System (TQS) factor

Technical Quality of Service/System is the other aspect of quality of service/system that is involved in this research. *TQS* concerns the technical aspects that reflect the quality of the service/system. In this sample, *TQS* was measured with three items that are listed in the following table (Table 6.8) and the results are shown in Figure 6.10:

Table 6.8: The TQS factor measured from the employees' perspective

Construct	Item code	Measure
Technical Quality of Service/System	TQS1	The existence of technical failure while using EGOV systems in my work would reduce my willingness to use them.
	TQS2	The emergence of alert/confirmation messages when using EGOV systems is important for me when processing transactions.
	TQS3	The interface design and layout of EGOV internal portals would significantly affect my willingness to use such systems.

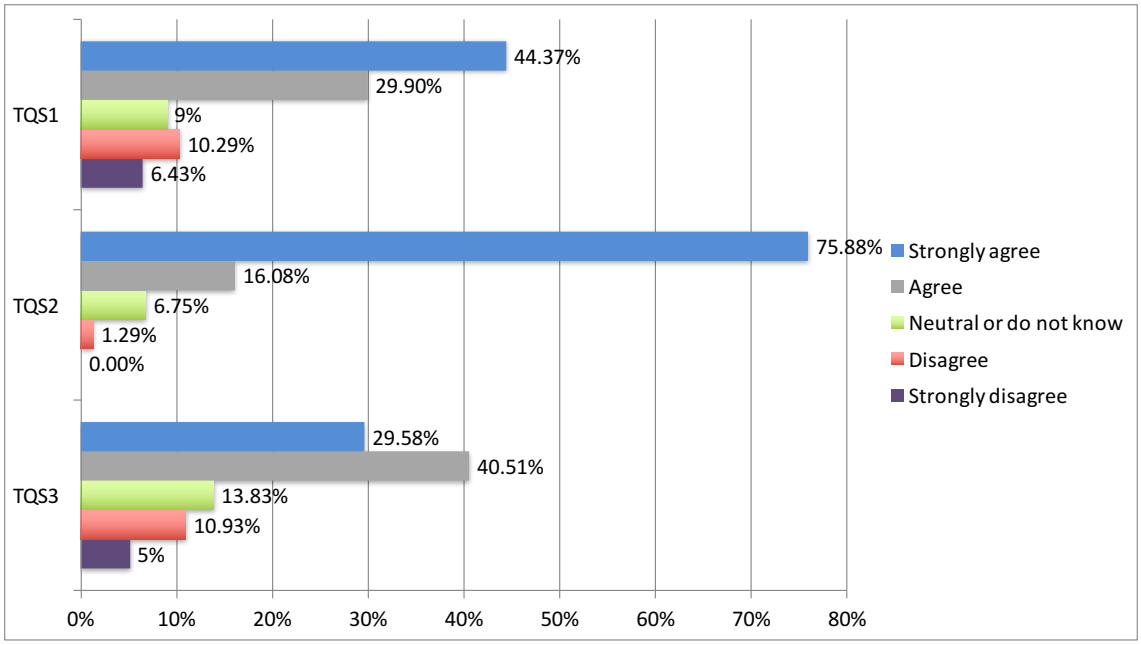


Figure 6.10: The results of TQS measurement items (government employees)

Item TQS1 asked the employees whether the existence of technical failures and errors while using e-Government systems in their work would reduce their intention to use. Figure 6.10 shows that almost three quarters of the respondents (74%) agreed with the negative impact of technical issues on their willingness to use such electronic systems while 16% of them disagreed. The Likert score for this item was 2.04 and this result shows the negative effect of technical failures and errors on employees' adoption and use. Technical failures and errors include slow network, server error and failures in internal portals. These technical issues were reported by the participants when they were asked about reasons that made them unsatisfied with using e-Government systems (see analysis of the *Previous Experience* factor).

Another technical quality aspect is the emergence of alert\confirmation messages when processing customers' transactions. Therefore, in item TQS2, employees were asked to determine the importance of this aspect for them. It is clear from Figure 6.10 that this aspect is very important for the majority of them. Approximately 91% agreed that this technical aspect is

important, about 6% were neutral or did not know and only 1% did not agree. The Likert score of 1.33 indicates that this feature would reflect positively on perceived technical quality which would increase employees' adoption and intention to use.

The interface design and layout of the internal portals of e-Government systems that the employees use for their work is another important aspect that reflects technical quality. Thus, item TQS3 asked employees to indicate the impact of this aspect on their willingness to use. The results revealed that 70% of the participating employees agreed with the proposed statement whereas 16% disagreed and 13% were neutral. The Likert score of 2.21 indicates a likelihood that the design and layout of internal portals would influence the employees' intention to use; thus, this aspect needs to be carefully and professionally considered due to its influence on the perceived technical quality.

The *Technical Quality of Service/System* factor was found to be influential and likely to affect employees' adoption and intention to use e-Government systems. The composite score of all the items involved in measuring the *TQS* factor was 1.86 and this result indicates this influence. The findings from the descriptive analysis of this factor showed the importance of considering technical quality of service when implementing e-Government systems, not only for the sake of successful implementation of the electronic system, but also to boost employees' adoption and intention to use. It was also shown that there was wide agreement that all the proposed technical aspects would influence adoption and utilisation. The outlier detection test demonstrated that there were no outlier cases in this factor's data.

The Accessibility (ACC) factor

Two items were involved in measuring the influence of the *Accessibility* (ACC) factor on employees' adoption and utilisation when using e-Government systems. The following table and graph show them and the results (Table 6.9 and Figure 6.11):

Table 6.9: The ACC factor measured from the employees' perspective

Construct	Item code	Measure
Accessibility	ACC1	Electronic access to other related agencies would enhance the performance and speed of processing customers' transactions.
	ACC2	I believe that providing efficient accessibility tools (e.g. computers and network) would positively affect employees' adoption and intention to use.

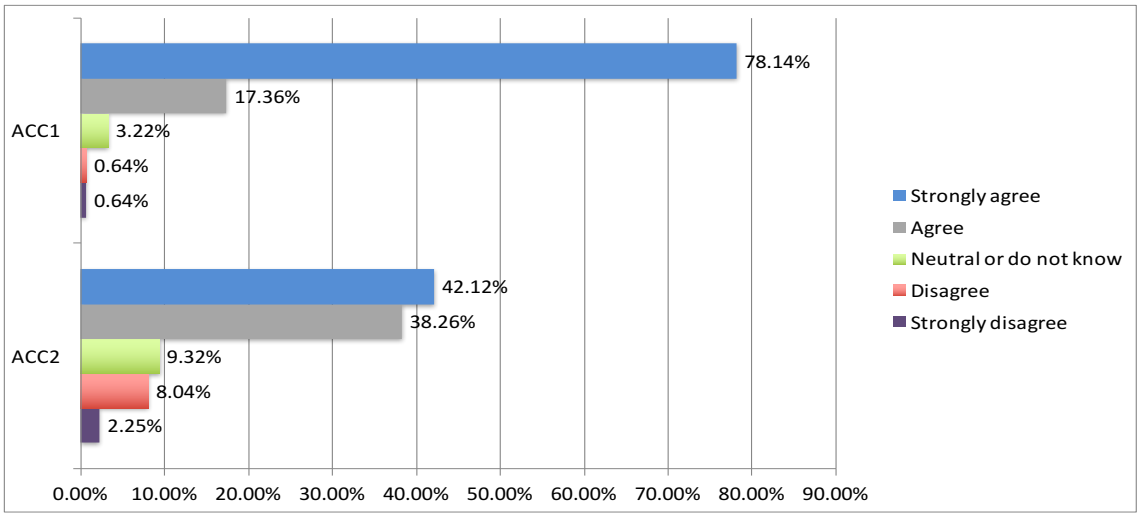


Figure 6.11: The results of ACC measurement items (government employees)

In the first item (ACC1), the employees were asked to indicate their views about electronic access to other agencies in relation to processing transactions and completing tasks. The vast majority (95%) of respondents agreed that such access would enhance their performance and speed of work. Around 3% were neutral and only 1% disagreed with the statement. The Likert score of 1.28 indicates the significance of electronic connection between related government agencies and that this connection would facilitate the processing of e-Transactions. Many government transactions in Saudi Arabia need processing and data from different agencies; therefore, electronic accessibility between different agencies would positively influence the performance and speed of processing e-Transactions and this would positively affect employees' intention to adopt and use.

With regard to item ACC2, more than three quarters of the participating employees (80%) agreed with that providing efficient accessibility tools such as updated computers and an effective network would positively affect their intention to adopt and use. The Likert score for this item is 1.90 indicating that accessibility tools including the available PCs and networks need to be efficient, of a high standard and high specifications commensurate with work tasks. A number of employees reported that technical weaknesses such as out-dated computers and slow networks would negatively affect their adoption and acceptance to use e-Government systems in their work, as they were not fully satisfied with their current use because of these limitations. Thus, it is crucial to provide an appropriate technical infrastructure that contributes to building successful e-Government systems with efficient accessibility tools.

The descriptive analysis revealed a strong agreement with the positive impact of the *Accessibility* factor on the employees' adoption and intention to use e-Government systems. The composite score of *ACC* is 1.59, and this shows the importance of facilitating accessibility when implementing electronic systems in the public sector. Low technical standards for essential

means to access and use e-Government systems do not adversely affect only the e-Government systems themselves, but also have a negative impact on employees' acceptance and intention to use them. The result for this factor was investigated against outlier cases and there were four detected cases. The composite score slightly changed to 1.55, leading to the same interpreted result; thus, all cases were included at this stage of analysis.

The Perceived Trust (PT) factor

The influence of *Perceived Trust* in this sample was measured with four items. The proposed items covered different aspects which were perceived trust, perceived security and perceived privacy. The measuring items are shown in Table 6.10 and the results are presented in Figure 6.12:

Table 6.10: The PT factor measured from the employees' perspective

Construct	Item code	Measure
Perceived Trust	PT1	I believe that the Internet is not safe to provide government services.
	PT2	I think that EGOV systems can be trusted and be used to process transactions successfully.
	PT3	I believe that EGOV systems can be trusted to reserve my employment rights.
	PT4	I feel that using EGOV systems in my work can invade my job privacy.

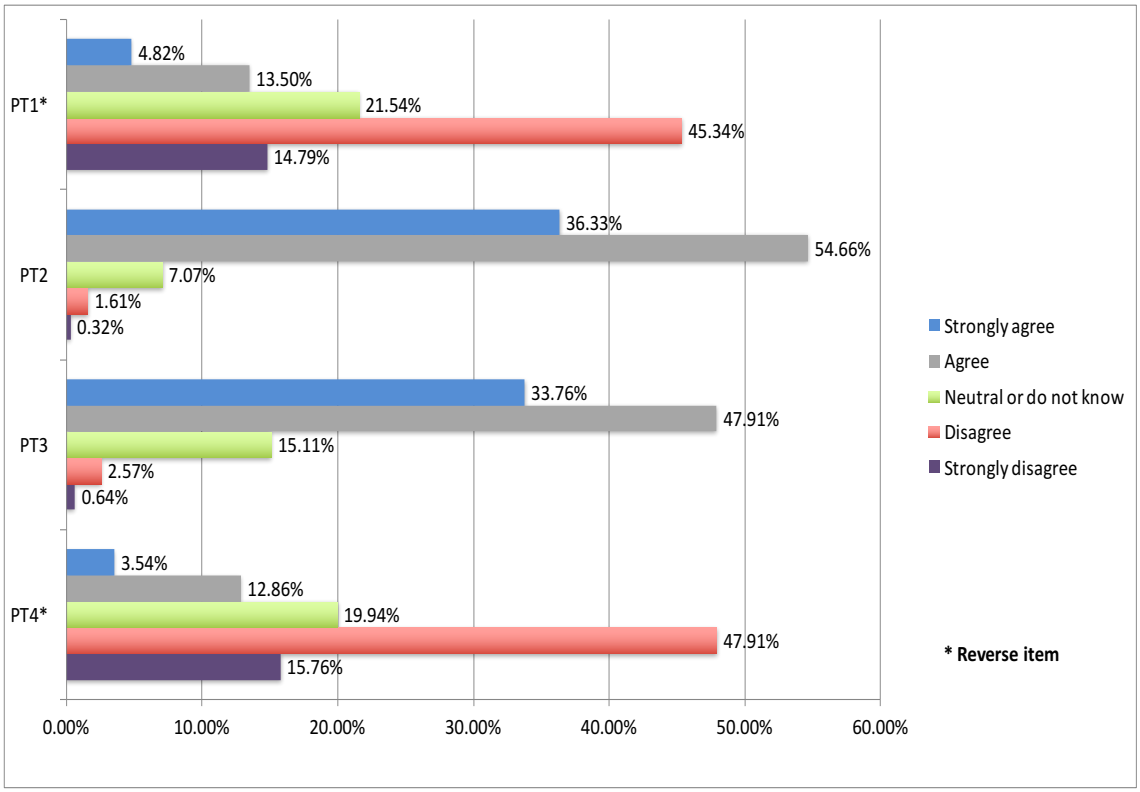


Figure 6.12: The results of PT measurement items (government employees)

Since e-Government services mainly rely on the Internet, the perceived trust about the use of the Internet for such services was measured from the employees' perspective. They were asked in item PT1 whether they believe that the Internet is safe to provide government services. It is clear from the graph (Figure 6.12) that 60% of the participating employees believe that it is safe to use the Internet to provide government e-Services. The graph also shows that 21% of them were neutral or did not know and 18% believe that it is not safe to use the Internet for such services. The Likert score is 3.51 and this indicates a positive trust perception amongst the employees about using the Internet in providing government services.

The respondents were also asked, in item PT2, to respond to the statement "I think that e-Government systems can be trusted to be used to process transactions successfully". The results showed that the overwhelming majority of employees (90%) agreed with the statement whilst only about 2% disagreed. The total score for this item was 1.74 and this means that the employees had a high trust perception of using e-Government systems to process transactions successfully.

The employees were also asked in item PT3 whether they trust e-Government systems in terms of reserving their employment rights. Unlike the paper-based method, where almost all procedures and tasks are written and archived in shelved records; processes and tasks in e-Government are supposed to be logged and archived electronically. In cases of conflict, mistakes, unexpected outcomes and also calculating bonuses, the traditional paper-based method is relatively highly trusted for conserving employees' rights. However, it is interesting to know if employees have a high perceived trust when using e-Government systems in the aforementioned situations. The results show that a large proportion of the participating employees (81%) believe that e-Government systems can be trusted to reserve their employment rights while only 3% did not believe that. The Likert score was 1.88 and this indicates a high trust perception about the ability to reserve employment rights even when using electronic and online systems.

With regard to perceived privacy, Figure 6.12 shows that 63% of respondents did not believe that using e-Government systems in their work would invade their job privacy (item PT4). It also shows that 19% of them were neutral and 16% believed that their job privacy could be violated. Job privacy includes the ability of other employees, who do not have permission, or even other users to access to information related to the employee's job information such as salary, grade and performance or even work activities. The Likert score for this item was 3.59 and this indicates the majority of the employees had high perceived trust about using e-Government systems in their work; and this is likely to influence their adoption and intention to use.

Furthermore, the results showed that the composite score was 2.13 and this result indicates that it is likely that perceived trust factor would influence the employees' adoption and intention to use e-Government systems in processing customers' transactions. Paying more attention to building good trust in such systems, especially the employees' perceived trust, is crucial. The data was investigated and there was only one detected outlier case. However, it did not have a significant impact on the final result, as the new composite score was 2.12.

The Regulations and policies (RP) factor

Implementing regulations and policies for using e-Government systems in work was proposed as one of the reliability factors. The influence of the *RP* factor was measured by three items. The items concerned the importance of applying regulations and policies to the employees and how they can affect their adoption and intention to use. The combined graph (Figure 6.13) demonstrates the results of the measure items.

Table 6.11: The RP factor measured from the employees' perspective

Construct	Item code	Measure
Regulations and Policies	RP1	I think that applying clear regulations and policies for using EGOV systems in work would enhance employees' adoption and intention to use.
	RP2	Applying high standards of information security and information privacy policies is important for me when using EGOV systems in my work.
	RP3	I feel that using EGOV systems in my work would contribute in reserving my employment rights since all activities can be logged and regulated.

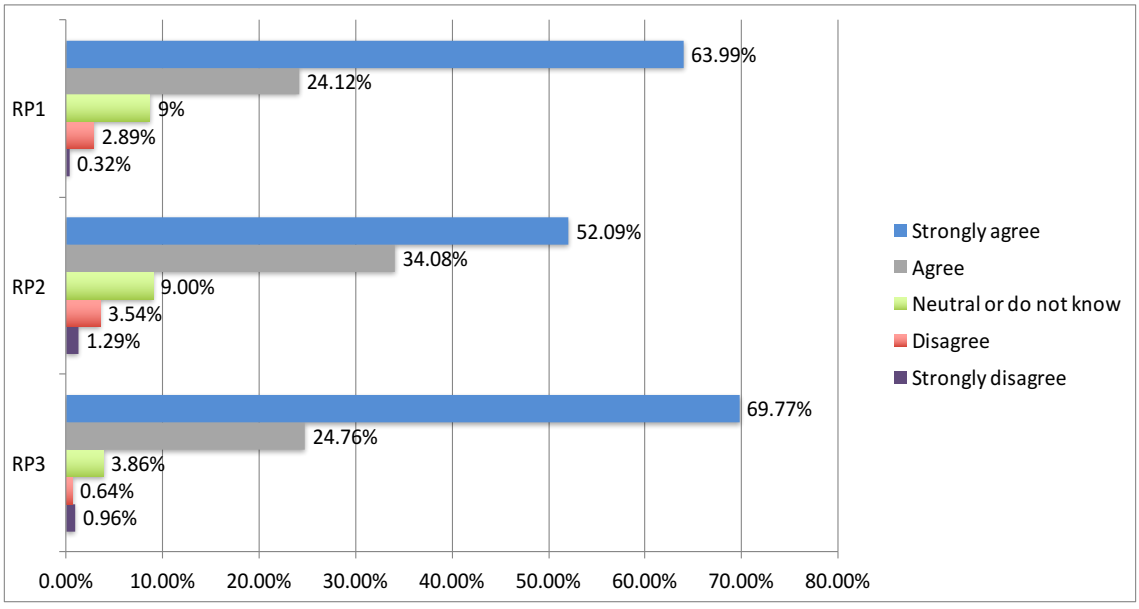


Figure 6.13: The results of RP measurement items (government employees)

The result of item RP1 reveal that most of the participating employees (88%) believe that applying clear regulations and policies to using e-Government systems would enhance employees' adoption and intention to use whereas only 3% did not believe that (see Figure 6.13). The Likert score is 1.51, indicating it is highly important to take care of regulating and implementing clear and strict policies and terms and conditions of use. Although the employees' use of e-Government systems to process customers' transactions is part of their job, and one might think that using electronic systems is just a simple transformation from paper-based work, such use needs to be properly regulated with proper policies, terms and conditions of use. Just like any electronic system, e-Government systems are vulnerable to technical errors or misuse that might adversely affect users' rights. Therefore, it is crucial to set up and apply rules and terms for using such e-Systems.

The importance of information security and information privacy policies was also considered in this research in item RP2. Figure 6.13 shows that 86% of employees reported that applying high standards of such policies is important for them when using e-Government systems in their work. Only a very low percentage (3%) of them did not believe it was of importance and 9% were neutral or did not know. The total score for this item was 1.67 and this result shows a very high agreement about the significance of information security and privacy for employees.

It can be seen from Figure 6.13 that around 94% of the respondents agreed with the statement for item RP3: "I feel that using e-Government systems in my work would contribute in reserving my employment rights since all activities can be logged and regulated", while only about 1% disagreed and 3% gave neutral responses. The Likert score was 1.38, suggesting that the majority of respondents found that using e-Government systems in their work would not harm their employment rights since such systems can be regulated with rules and terms of use.

It was found from the results that the existence of regulations and policies relating to the use of e-Government systems plays a vital role in employees' adoption and intention to use. The composite score of 1.52 is evidence that setting up and applying rules, policies and terms of use is not just important for controlling electronic systems, but also to ensure high adoption, acceptance and use by employees. Normally such regulations and policies involve a lot of terms and conditions; thus, making them clear and applicable is important too. The most significant ones can be summarized in a straightforward way to encourage employees to read and understand them. There was only one outlier detected in the test, but it had no significant effect on the composite score, as the new score was 1.51.

The Intention to use e-Government systems (ITU)

Intention to Use e-Government systems was proposed as dependent variable in the research model (EGAUM). This variable was measured with four items in the employees' sample using a 5-point Likert scale. The results for the measured items are presented in Figure 6.14.

Table 6.12: ITU measured from the employees' perspective

Construct	Item code	Measure
Intention to Use	ITU1	I intend to use EGOV systems in my work to process customers' transactions.
	ITU2	I do not mind dealing with customers electronically with regards to their transactions.
	ITU3	I do not mind dealing with my colleagues, managers and other employees electronically.
	ITU4	I prefer using EGOV systems to process transactions more than using a paper-based method.

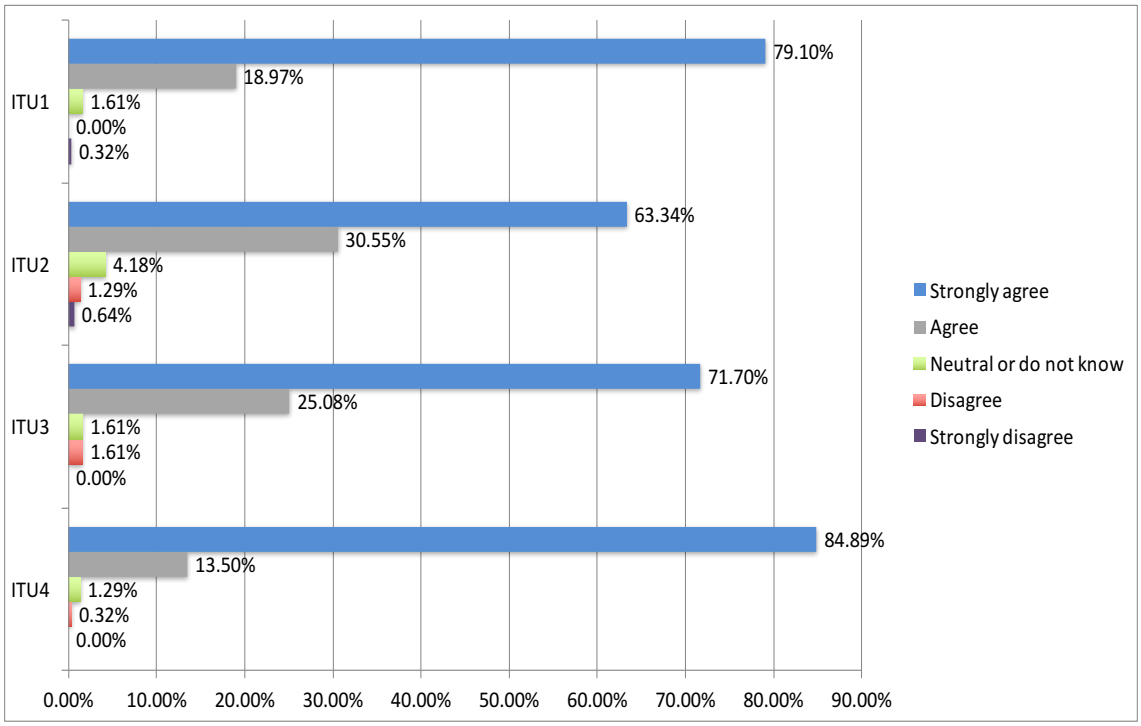


Figure 6.14: The results of ITU measurement items (government employees)

The first item (ITU1) asked the employees to respond to the statement "I intend to use e-Government systems in my work to process customers' transactions". Figure 6.14 shows that the employees' intention to use was very high since 98% of them agreed with the statement. A very low percentage of the participants (under 1%) did not intend to use e-Government. The Likert score of 1.23 indicates a general willingness amongst the participating employees to use e-Government systems to process customers' transactions. The employees were also asked in item ITU2 whether they were willing to deal electronically with customers regarding their

transactions. The results revealed that the majority (93%) of them did not mind, whereas only 2% did mind. The Likert score for this item is 1.45 suggesting that the majority of the employees have a high level of intention to deal electronically with customers (directly or indirectly) regarding their government transactions.

The employees' use of e-Government systems in their work usually involves communicating with other employees electronically either for next step in processing transactions, transforming e-Transactions to other related employees or for other reasons related to their work. This kind of communication is part of using e-Government systems. Thus in item ITU3, employees were asked to indicate their views about internal electronic dealings with other staff. Figure 6.14 shows that the overwhelming majority (96%) did not mind dealing with colleagues electronically, whilst just less than 2% did mind. The Likert score for this item is 1.33 and this also shows the generally high intention to deal electronically with others within government agencies.

As part of measuring the employees' intention to use e-Government systems, they were asked in item ITU4 whether they prefer using electronic systems or traditional paper-based methods to process transactions. It is apparent from Figure 6.14 that the vast majority (98%) preferred using e-Government systems to using a paper-based method. The Likert score of 1.17 suggests a very high intention to use e-Government systems in preference over the use of paper documents to process and complete customers' transactions.

The results clearly revealed a high level of intention to use e-Government systems from the government employees' perspective. The composite score for this factor is 1.29, indicating a very positive result in terms of the employees' intention to use e-Government systems in their work either to deal with customers, colleagues or to process transactions. The correlation between this high intention to use and all the proposed factors will be presented later in this chapter (Section 6.4) in order to explore the most and least influential factors from the government employees' perspective. Only two cases of outliers were detected. However, all the cases will be involved as the detected outlier cases had no significant effect, as the new composite score was 1.28.

The Perceived E-Readiness of e-Government systems (PER)

In this variable, three items were involved to measure the employees' perception about the readiness of e-Government systems. These three items are listed in the following table (Table 6.13) and the results are shown in Figure 6.15:

Table 6.13: PER measured from the employees' perspective

Construct	Item code	Measure
Perceived E-Readiness	PER1	I think that the current ICT infrastructure in Saudi Arabia is not efficient enough to provide reliable EGOV services.
	PER2	I feel that my organisation is currently not able to provide EGOV services as required.
	PER3	The current potentials in my organisation (including the used technology, funds and qualified personnel) are not enough to implement EGOV systems successfully.

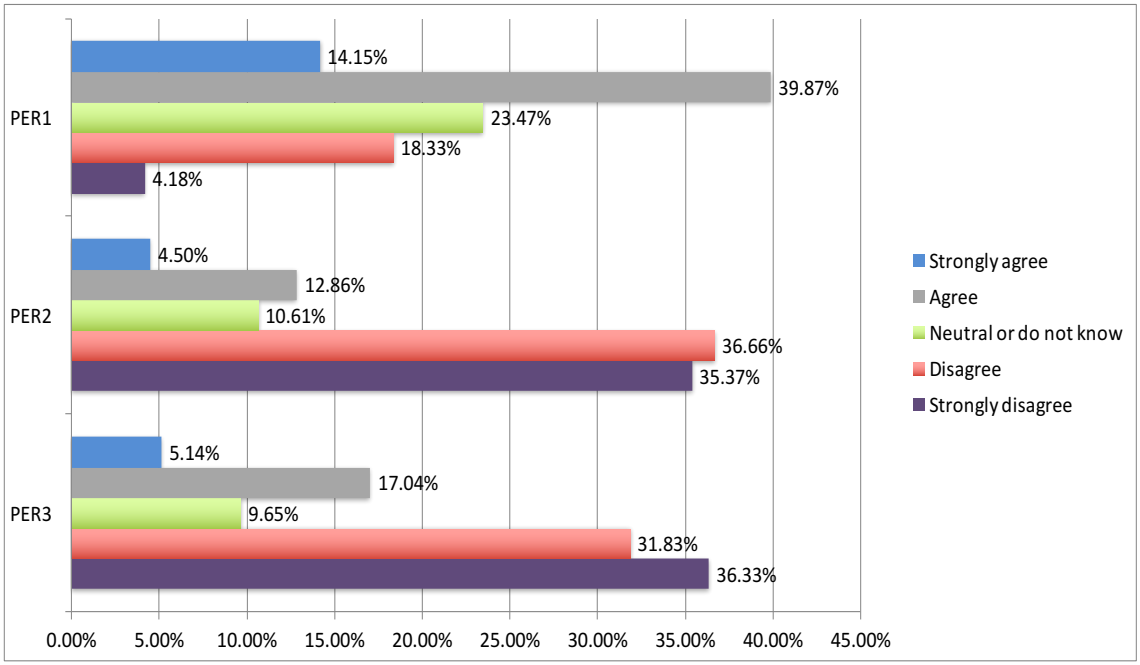


Figure 6.15: The results of PER measurement items (government employees)

As seen in Figure 6.15, over half the respondents (54%) agree with the PER1 statement "I think that the current ICT infrastructure in Saudi Arabia is not efficient enough to provide reliable e-Government services"; less than quarter of them (22%) disagree and a similar percentage of them are uncertain about the statement. The Likert score was 2.58 indicating that the majority of the employees believe that current ICT infrastructure needs to be improved further in order to provide successful e-Government services. The graph also shows the results for item PER2, and it is clear that the majority of the respondents (72%) believe that the organisations that they work for are able to provide e-Government services as required, while 17% of them did not. The total score for this item was 3.85 suggesting that the employees had a positive perception about their agencies' ability to implement and provide e-Services as required.

In item PER3, employees were asked for their views about the sufficiency of the current available potential in their agencies to implement e-Government systems successfully. This includes technical potential such as computers and communication technologies; human potential such as qualified IT employees; and financial potential to fund the e-Government project. The results also show a positive perception whereby 68% of employees believe that their agencies have enough potential to successfully implement e-Government systems (see Figure 6.15). The Likert score for this item is 3.77 and indicates that employees have a positive perception about the current potential available in their organisations.

Although employees generally had a positive perception about their agencies' potential and ability to implement and provide e-Government systems successfully; they also had a negative perception of the ICT infrastructure in Saudi Arabia. The composite score for this variable was 3.40 and this means that there was a relatively general positive perception amongst the employees about the readiness of e-Government system. The internal ICT infrastructure (within government agencies) and the national ICT infrastructure need to be of a high standard in order to successfully transform to government e-Services. Any shortcomings in either the national or organisational potential would adversely affect the electronic transformation of the public sector.

6.4 Statistical analysis and hypotheses assessment from the public employees' perspective

In this section, the statistical tests and procedures carried out for further analysis in order to explore the correlation between the proposed factors and employees' adoption and intention to use e-Government systems in their work are described. The descriptive analysis is also summarised and interpreted alongside the results of the statistical findings in order to better understand and determine the influence of factors. Each factor has now a composite value that can be used in assessing the hypothesized correlations; and these correlation assessments determine the most and least influential factors, which is one of the objectives of this research. The employed statistical procedure was Spearman's correlation coefficient. This is because the normality test (Shapiro-Wilk's test) showed that the data for most of the factors was not normally distributed ($p<0.5$). These analysis procedures were discussed in Chapter 4 as was the winsorization procedure used for all outlier cases. Besides the statistical analysis, this section also discusses the findings from the semi-structured interviews with the participating employees.

6.4.1 Personal Factors (PF)

The personal factors that were proposed in the research model (EGAUM) involve age, gender, education, location and income. With regards to the **age factor** and its relationship and effect on employees' adoption and intention to use, the results revealed that there are no significant differences in the intentions to use among the different age groups. Table 6.14 below presents the composite scores of intention to use for different age groups. Although the results showed no significant differences, the age group 46-60 years had the lowest level of intention to adopt and use; however, this result does not statistically support hypothesis H1 but does indicate that employees of different age bands have a high level of intention to use e-Government systems in their work to complete tasks and process transactions.

H1: Different group of age will have different levels of intention to use e-Government system/services.

Table 6.14: Intention to Use by employees of different age groups

Age groups	ITU composite scores							Total
	1.00	**1.25**	**1.50**	**1.75**	**2.00**	**2.25**	**2.50**	
18 – 30	43 (54.4%)	11 (13.9%)	8 (10.1%)	8 (10.1%)	7 (8.8%)	0	2 (2.5%)	79
31 – 45	93 (56.3%)	20 (12.1%)	23 (13.9%)	11 (6.6%)	13 (7.8%)	3 (1.8%)	2 (1.2%)	165
46 - 60	33 (49%)	7 (10.4%)	8 (11.9%)	6 (8.9%)	11 (16.5%)	0	2 (2.9%)	67
Total	169	38	39	25	31	3	6	311

The impact of age factor was also investigated during the interviews. Two of the interviewed employees did not believe that age would influence employees' adoption and use. One said that: "*age has no impact, all employees can adopt and use e-Government systems whatever their age as long as they are working in the public sector"*. The other employee stated that: "*... if the electronic systems are implemented, all employees of all ages should use them or they might change their jobs"*. However, a number of the interviewed employees thought that using electronic systems might be difficult for some older employees. One respondent said: *"... older employees sometimes might not accept and adopt technology, and this is a problem especially if those employees are in top management. We had a manager who refused implementing an electronic system and Interactive Voice Response (IVR) technology in our department, but when he retired, the new manager approved the new systems straightaway"*. He added: "*I think older employees who approached retirement age would not bother with implementing new technology, because if they did, there would be a bigger work load during the implementation process*". Another employee said: "*... older employees might not prefer using e-Government systems and this is because of their age and their experience with traditional methods"*. Another response was about the influence of the fast and sudden implementation of e-

Government systems on the older employees without prior preparation and proper foundations. This respondent said: "*... when e-Government systems are implemented fast and without preparation, employees, especially the older employees, would face difficulties in accepting and using them because they do not know how to use them".* Therefore, it is crucial to prepare employees by training them and increasing their awareness before implementing electronic systems in the public sector, as this would positively influence the adoption and utilisation by employees of all age groups.

In terms of the impact of the **gender factor**, this sample only involved male participants due to certain reasons that were discussed earlier in this chapter (see Section 6.2). However, the researcher attempted to explore and investigate the influence of this factor from the interview responses. Almost all the interviewee employees agreed on that gender has no influence on employees' adoption and use. One of the respondent said: "*I see no effect of the employee's gender on the acceptance and use of e-Government systems, both male and female can use them".* Only one employee thought that gender factor could delay some transactions processing. He said: "*... some transactions in our department require the personal presence of the legal guardian of the female customers for identity verification, in this case, the transaction needs to be transferred to the male section and this could delay the transaction processing".* Although this can negatively affect the adoption and use of female employees, it can be considered as a procedural matter more than the influence of gender. Therefore, there is no empirical evidence that supports hypothesis H2.

H2: Different genders will have different levels of intention to use e-Government system/services.

With regards to the influence of **education level** on employees' intention to adopt and use, Table 6.15 below shows the variation in intention to use based on employees' education level. Employees with a high education level such as a Bachelor or Masters degree had a higher level of intention to use than other employees. For example, the table shows that the majority of employees who hold Bachelor degrees (57%) have very high level of intention to use (ITU composite score = 1); as do (61%) of employees with Masters. These two categories have a higher intention to use than employees with a lower education level, namely, public education or Diploma. This indicates that employees of different education levels would have different levels of intention to use, and this supports hypothesis H3.

H3: Different levels of education will have different levels of intention to use e-Government system/services.

Table 6.15: Intention to Use by employees with different education levels

Education level	**ITU composite scores**							**Total**
	1.00	**1.25**	**1.50**	**1.75**	**2.00**	**2.25**	**2.50**	
Secondary school or less	15 (46.8%)	3 (9.3%)	4 (12.5%)	2 (6.2%)	6 (18.7%)	0	2 (6.2%)	32
Diploma	22 (43.1%)	10 (19.6%)	9 (17.6%)	5 (9.8%)	4 (7.8%)	0	1 (1.9%)	51
Bachelor	101 (57%)	17 (9.6%)	21 (11.8%)	15 (8.4%)	19 (10.7%)	2 (1.1%)	2 (1.1%)	177
Master	30 (61.2%)	8 (16.3%)	5 (10.2%)	3 (6.1%)	2 (4%)	1 (2%)	0	49
PhD	1 (50%)	0	0	0	0	0	1 (50%)	2
Total	169	38	39	25	31	3	6	311

These variations are also supported by a number of interviewees. One said: *"... of course, employees with a low educational level would not prefer using technology and might refuse or use it incorrectly".* Another employee said that: "*...the higher the employees' education level, the higher their knowledge about using and (the higher) their willingness to use would be".* One interviewee linked the influence of education level with age. He said that:" *the impact of the education level can be linked to the employee's age, because for the older employees, the use of computers and technologies did not exist in the education system in their time or it was limited, and this might affect their intention and acceptance to use technology now".* However, some employees did not see that education level would influence the employees' adoption and use; as they believed that all people could now use computers and technology easily. Generally, it is likely that education level would have impact on employees' adoption and use. E-Service providers should lay on enough training and provide awareness campaigns for employees to minimise the impact of this factor.

As stated earlier in Chapter 4, the data of this research was collected from three different locations, namely, Riyadh, Jeddah and Alkhobar, which are major cities. This is to support the comprehensiveness and generalizability of the results. However, rural areas and villages were not involved due to the time limitations of this research. Thus, the impact of the **location factor** was not statistically explored in this research. Nevertheless, the possible influence of the users' locations on their adoption and use was considered during the interviews. The majority of interviewed employees believed that geographical location (either the employee's or the government department's location) has no effect on adoption and intention to use. On the other hand, two employees believed that this factor could have some effect. One said:" … *this could affect e-Transaction processing because e-Government systems rely mainly on the Internet, and the Internet coverage is still weak in remote areas and some small cities. This would negatively affect the agency's performance and may affect the acceptance and use of the employees who work there".* Another respondent commented positively on the impact of the employee's

location "*some employees are living outside Riyadh city and they commute to the ministry every day, those employees can complete some of their work tasks from home especially in busy periods and they do not need to stay at the ministry after working hours"*. Generally, the location factor might influence the employees' adoption and use one way or another but this research limits the exploration of its influence under the *TQS* and *ACC* factors –in terms of the technical limitations of the infrastructure.

Users' **income** is another proposed factor that possibly influences employees' adoption and use. The survey collected data about the monthly salary that employees receive from the government agency that they work for. Table 6.16 below shows that although there are no significant variations in terms of intention to use among employees in the other salary categories; employees in the salary category of 5,000-10,000 SAR have the lowest intention to use. This result can be statistical evidence that supports hypothesis H5.

H5: The user's income is related to the intention to use e-Government system/services.

Table 6.16: Intention to Use by employees in different salary categories

Monthly salary	ITU composite scores							Total
	1.00	**1.25**	**1.50**	**1.75**	**2.00**	**2.25**	**2.50**	
5000 – 10000	44 (41.9%)	15 (14.2%)	18 (17.1%)	13 (12.3%)	13 (12.3%)	0	2 (1.9%)	105
10001 – 15000	77 (62.6%)	16 (13%)	13 (10.5%)	7 (5.6%)	6 (4.8%)	3 (2.4%)	1 (0.8%)	123
15001 – 20000	28 (58.3%)	4 (8.3%)	3 (6.2%)	3 (6.2%)	7 (14.5%)	0	3 (6.2%)	48
20001 – 25000	13 (59%)	1 (4.5%)	3 (13.6%)	1 (4.5%)	4 (18.1%)	0	0	22
+ 25000	7 (53.8%)	2 (15.3%)	2 (15.3%)	1 (7.6%)	1 (7.6%)	0	0	13
Total	169	38	39	25	31	3	6	311

The interviewed employees were asked about the possible influence of the income factor. Most of them believed that there is no relation between employees' income and their acceptance and adoption. One of them said: "*... it will not affect their acceptance and willingness to use because their salary will be the same whether they complete their tasks manually or by using electronic systems"*. Another employee believed that income or salary is not an influential factor even for the employees with low salaries. He added: *"... the work would be easier and more convenient with the same salary that they previously received for using papers"*. On the other hand, some other employees see that this factor could be influential in some cases. For example, public employees in Saudi Arabia could receive an extra bonus if their work involved the use of computers. One of the interviewee commented on this bonus as a positive and negative thing at the same time. He said: *"... the extra bonus of using computers in the public sector could encourage employees to accept and use e-Government systems; further, some employees may change their jobs because of this bonus. But at the same time, this could*

discourage them and make them avoid completing e-Transactions if they do not receive this bonus". Generally, it is likely that income has an influence on intention to use in that employees whose salaries are in the lower range are less like to accept and use e-Government. An extra bonus for using a computer, as stated earlier in this paragraph, could be employed to increase the employees' acceptance and willingness to use, especially those with lower salaries. This incentive could also be employed as an overtime bonus for employees who use e-Government systems to process more e-Transactions out of working hours.

6.4.2 Motivational Factors (MF)

This section presents the results of the statistical analysis of the MF construct that involves five factors, namely: *Perceived Benefits* (*PB*), *Socio-Cultural* (*SC*), *Awareness* (*AW*), *Functional Quality of Service/System* (*FQS*) and *Previous Experience* (*PE*). It discusses how such factors correlate and impact on employees' adoption and intention to use. Table 6.16 below summarizes and interprets the findings from the descriptive analysis; and the likely influence of each factor on the intention to use. The hypothesized relationships are statistically tested and discussed. It was found that *PB*, *SC*, *AW* and *FQS* were the most significant factors.

Table 6.17: Summary of the descriptive analysis of MFs from the employees' perspective

Factor	N	No. of items	Mean	S.D.	Results interpretation
PB	311	5	1.42	0.47	Very influential
SC	311	9	2.23	0.53	Influential
AW	311	3	1.74	0.62	Very influential
FQS	311	6	1.97	0.55	Influential

6.4.2.1 The Perceived Benefits factor (PB)

According to the descriptive analysis, it is very likely that the *PB* factor has a positive and significant influence on employees' adoption and intention to use e-Government systems in their work. The composite score of M=1.42 can be interpreted as meaning that *PB* is a very influential factor. This result supports the hypothesized relationship (H6) between the *PB* factor and *ITU* presented below.

H6: There is a positive relationship between perceived benefits and intention to use e-Government systems/services.

In terms of the statistical analysis, the correlation between *PB* and *ITU* was assessed using Spearman's correlation procedure. It was found that there is a positive relationship between the employees' perceived benefits and their intention to use the e-Government systems, r_s = .462.

This correlation is considered to be upper medium in terms of strength according to Cohen's suggested guidelines (1988); and this relationship is also statistically significant, $p < .0005$. This finding also supports the hypothesized relationship (H6) i.e. a high level of perceived benefits is positively associated with a high level of intention to use. Figure 6.16 demonstrates this positive relationship.

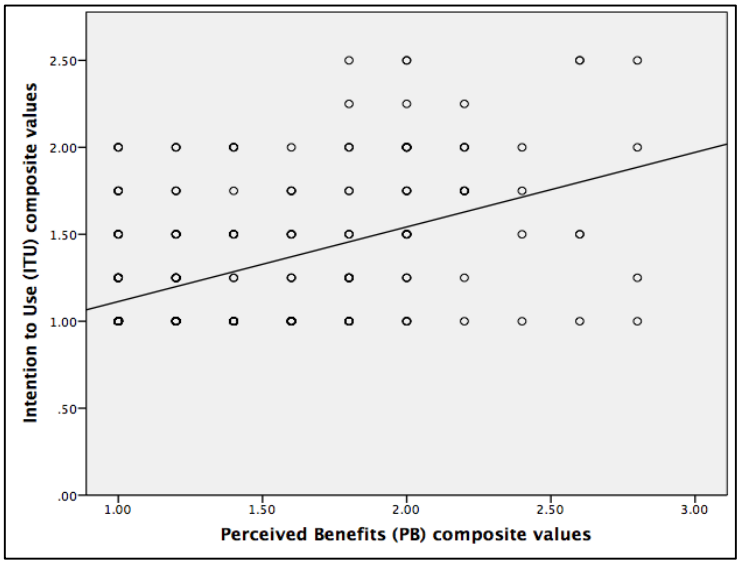


Figure 6.16: The relationship trend line between PB and ITU (government employees)

Similar to the results from the citizens' perspective, *PB* has a significant positive relationship with the employees' adoption and intention to use e-Government systems. In other words, it is very likely that the employees' acceptance and willingness to use would increase if they perceive that electronic systems are beneficial for them and their work. The result of this factor is in accordance with those reported in Sawalha & Abu-Shanab's (2015) study. They claimed that perceived usefulness is a significant factor that influences government employees' acceptance and intention to use in Jordan. Furthermore, Al-Zaabi et al. (2012) conducted a study in the United Arab Emirates, which is a neighbouring country of Saudi Arabia, in order to identify and understand factors affecting the diffusion, adoption and use of e-Services in the Abu Dhabi Police Force, which is a public sector organisation. The study found a high level of acceptance to adopt and use e-Government systems amongst the employees. All the participants argued that such systems need to be useful and beneficial to them. Lack of knowledge and little perception of the benefits that e-Government can provide would be likely lead to low adoption and acceptance to use. Weerakkody (2012) states that one of the main reasons behind resistance to change is that the employees do not understand the relative advantages and benefits of using e-Government. Thus, the employees need to perceive that using e-Government services and systems is beneficial for them and their work.

All the interviewed employees showed a positive perception about the benefits that e-Government systems could provide. This is clearly reflected in their intention to use levels that were presented in the descriptive section. One of them stated that such systems *"would organise the public sector work"*. Another employee said: *"... e-Government systems facilitated my work and helped me to complete more transactions quicker"*. When asked, another employee said: *"after implementing an electronic system in our department, many procedures and complex protocols that existed with paper systems have now decreased"*. One of the respondents said: *"... these systems reduced the workload especially in terms of customer reception. They reduced the crowds in the department and also minimised the problems that occurred with the paper work. Although some transactions are still completely or partially paper-based and also customers still need to visit us for some transactions, it is far better than before"*. All the previously discussed results and interviewees' opinions show the importance of this factor; and how employees need to positively perceive and experience the benefits of implementing e-Government systems in the public sector.

6.4.2.2 The Socio-Cultural factor (SC)

According to the findings of the descriptive analysis, *Socio-Cultural* can be seen as an influential factor (see Table 6.18). It was found that influence of others was one of the most important socio-cultural aspects to affect employees' adoption. Moreover, a sense of progression when using e-Government systems at work had a positive impact on the employees' adoption and intention to use too. In terms of statistical analysis, the correlation between the *Socio-Cultural* factor and employees' intention to use was examined utilising Spearman's correlation coefficient. It was found that there is a statistically significant and positive correlation between the *SC* factor and employees' intention to use, $r_s = .342$, $n = 311$, $p < .0005$. Therefore, hypothesis H7 is supported and the relationship trend line can be seen in Figure 6.17.

H7: There is a positive relationship between the Socio-Cultural factor and intention to use e-Government systems/services.

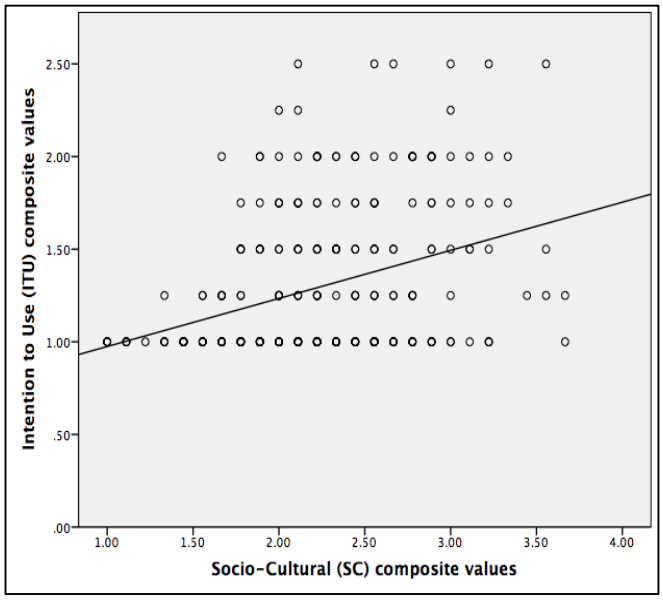


Figure 6.17: The relationship trend line between SC and ITU (government employees)

The results of both analysis procedures (descriptive and statistical analysis) revealed that social and cultural aspects influence employees' adoption and intention to use. These aspects include influence of others, influence of image, influence of technology resistance and influence of their concerns and beliefs. This finding indicates that it is crucial to consider the employees' beliefs, concerns, thoughts and feelings when implementing e-Government systems. Sawalha & Abu-Shanab (2015) argued that Social Influence is one of the significant factors that affect employees' intention to use in Jordan. Although there are few studies that investigate and analyse the influence of socio-cultural factors on employees' adoption and use, some studies found it to be an influential factor on the adoption by other users, such as citizens (Alshehri et al, 2012; Calvin et al., 2008). Thus, this study has contributed knowledge about the influence of these factors from the perspective of government employees; and shown that the *Socio-Cultural* factor correlates positively with employees' intention to adopt and use e-Government systems.

The responses from some interviewed employees also show the importance of this factor. When asked about their concerns about the reduction of job opportunities or loss of jobs when implementing e-Government systems, two employees stated that these concerns exist to some extent. One of them said: *"... implementing electronic systems might reduce the jobs in the public sector because as I said that the work that used to be done by number of employees, now it is done by only one employee"*. Another employee said: *"... some employees may be discharged such as messengers* [an employee who transfer the transactions' documents between departments]*, but I think they can be trained to use technology"*. In terms of the concern of reducing the employees' privileges and responsibilities, one of the respondents said: *"... some forms of authority could become limited to certain employees, and completing transactions*

would be prevented without those employees, and this would delay the work". This means that the authority for granting permission to process or complete procedures related to some e-Transactions could become limited to specific employees. This might delay the processing of e-Transactions as other employees would have to wait for authorisation to proceed with processing the e-Transactions. These stated concerns are parts of the socio-cultural factor; which should be taken into account when implementing e-Government systems.

6.4.2.3 The Awareness factor (AW)

The results of the descriptive analysis show that the *Awareness* factor plays an important role in employees' willingness to adopt and use e-Government systems. It is suggested that this factor is very influential, see Table 6.17. The correlation between *AW* and *ITU* was statistically assessed; and it was found that there is a positive correlation between employees' awareness about e-Government use, benefits and advantages and their intention to use, r_s= .388, n = 311, p< .0005. The results of both analysis procedures suggest that this factor is influential, and this supports the hypothesized relationship (H8).

H8: There is a positive relationship between awareness and intention to use e-Government systems/services.

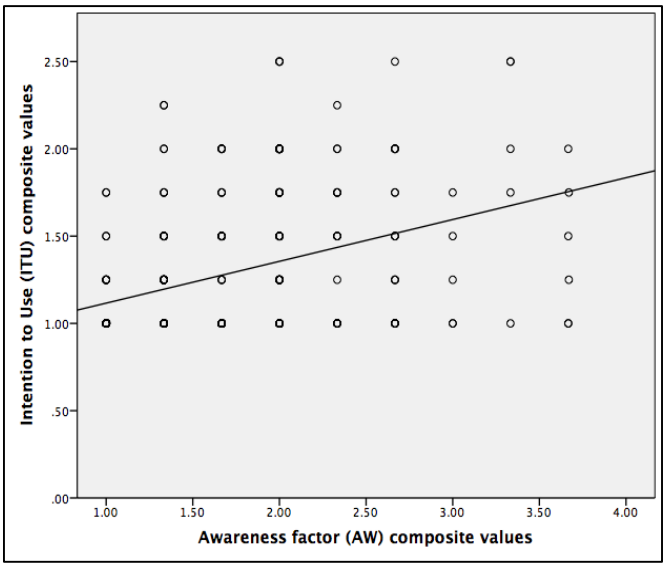


Figure 6.18: The relationship trend line between AW and ITU (government employees)

This study found that almost half of the participating employees (46%) did not receive enough, or even any, training or awareness initiatives. Providing training courses is not only important for training employees on how to use electronic systems; but also would increase their awareness about the potential, abilities and advantages of e-Government systems. According to

a study conducted by Alshehri et al. in Saudi Arabia that aimed to analyse obstacles and challenges in e-Government adoption from the employees' perspective, a lack of knowledge and ability to use computers and technology efficiently ranked as one of the most important barriers and challenges that directly affected the adoption process. They also found that lack of knowledge about the potential of e-Government ranked as a very important barrier for the majority of participating employees (Alshehri et al, 2012). Calvin et al. (2008) also found that it is vital to create user awareness when implementing e-Government systems and services. Training courses should be provided to increase employees' skills, awareness and knowledge of the fundamentals of e-Government (Mahmood, 2013). The current research suggests that increasing awareness would significantly contribute to increasing employees' willingness and intention to adopt and use e-Government systems in their work.

All the interviewees strongly agreed on the importance and influence of the awareness factor. However, most of them complained about the lack of provision of training in how to use electronic systems, especially at the beginning of implementation. When asked about the influence of awareness about the potential and benefits of using e-Government systems in the public sector, one of the employees said: *"... it is important and very influential, but unfortunately not enough attention is paid to it or it is provided later"*. It is crucial to provide sufficient training and awareness campaigns even before implementing such systems. Not doing so would be likely to cause many problems and would impede the success of these systems and the achievement of the desired goals. One respondent said: *"... one of the problems of implementing e-Government systems is implementing them and letting the employees use them straightaway without training"*. Moreover, one of the employees stated that: *"I think that unawareness of the employees about using such systems and lack of training is one of the main reasons that adversely affect their willingness to use"*. Therefore, awareness is one of the significant factors that need to be given more attention.

6.4.2.4 The Functional Quality of Service/System factor (FQS)

The results of the descriptive analysis showed that the functional aspects that reflect a high quality of service/system are likely to influence employees' adoption and intention to use. *FQS* can be categorized as an influential factor and this means that a high functional quality of service would increase government employees' intention to adopt and use (see Table 6.17). The statistical analysis also shows that there is a positive and statistically significant relationship between the functional quality of service/system and the employees' intention to use, $r_s = .427$, $n = 311$, $p < .0005$. Therefore, the results from all the analysis support the hypothesized relationship in H9 and the trend line of this relationship can be seen in Figure (6.19).

H9: There is a positive relationship between functional quality of service and intention to use e-Government systems/services.

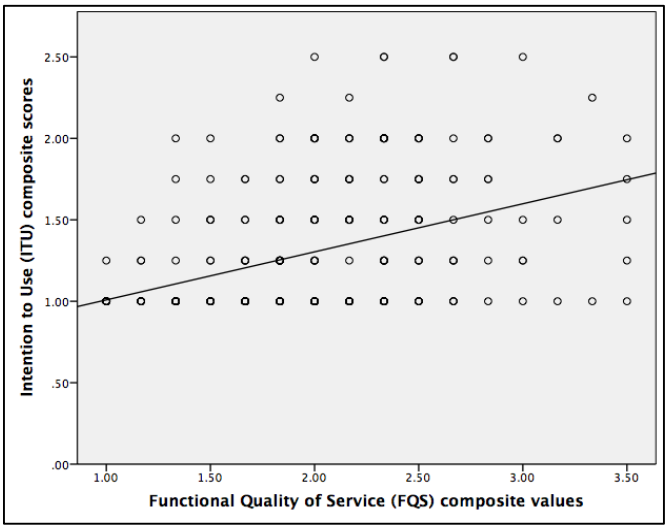


Figure 6.19: The relationship trend line between FQS and ITU (government employees)

Abdelsalam et al. (2012) conducted a study in Egypt that aimed to examine the success factors of e-Government systems from the employees' perspective. They found that a high quality in the implemented e-Government systems lead to high levels of satisfaction and intention to use. They also stated that low quality would hinder the success of e-Government systems. One of the employees interviewed in this study said in this regard: *"... incorrect implementation of the electronic systems in the public sector or implementing them with low quality would cause a lot of work mistakes leading to poor performance and low willingness"*. Thus, it is essential to improve the quality of the functional aspects when implementing e-Government systems in order to achieve high levels of adoption and use. This is more important for developing countries, including Saudi Arabia, because such countries have limited resources and also because online and electronic interaction is still new to their societies.

6.4.2.5 The Previous Experience factor (PE)

Employees' previous experience of use was measured with two items, each of which concerned different types of use; namely, the use of e-Government systems and the use of online non-government services such as online banking and online purchasing. The descriptive analysis of the first item showed that the median was *Md* = 2 and this means that the majority were not fully satisfied (satisfied to some extent) with their use of current e-Government systems in their work. The correlation between employee satisfaction and their intention to use was statistically assessed utilising Spearman's correlation coefficient; and it was found that there is a positive correlation between their satisfaction about their previous use and their intention to use,

r_s = .223, n = 270, p < .0005. This result supports the hypothesized relationship H10. Although the correlation was relatively weak, it shows a positive relationship between PE of using e-Government systems and ITU. This means that the more employees are satisfied with their previous use, the higher their intention to use will be.

H10: There is a positive relationship between previous experience and intention to use e-Government systems/services.

The other item involved in measuring this factor was concerned with the use of other online services (other than the use of e-Government systems). The descriptive analysis for this item clearly showed that employees' previous experience of performing online transactions would have a positive impact on their willingness to use e-Government systems in their work as the median was *Md* = 1, and this refers to the answer "Yes, positively". Since the influence of previous experience of using online non-government services was measured with a single item that did not have sequential answers, a cross-tabulation procedure was utilised to analyse this item statistically, see Table 6.17.

Table 6.18: The results of cross-tabulation between ITU and PE (non-government online services)

		Will the previous experience of performing online transactions in your daily life affect your willingness to use EGOV systems in your job			
		Yes, positively	Yes, negatively	No effect	Total
Intention to use (ITU) composite values	1.00	133	1	31	165
	1.25	26	0	10	36
	1.50	27	1	8	36
	1.75	12	0	9	21
	2.00	19	0	8	27
	2.25	2	0	1	3
	2.50	2	1	2	5
Total		221	3	69	293

It is clear from the table that the majority (75%) of the participating employees responded that such previous use has a positive impact on their willingness to use e-Government systems. It is also apparent that the intention to use increases with the increase in the number of employees who responded "Yes, positively". This means that the previous experience of using non-government online services has a positive influence on employees' intention to use e-Government systems in their work. This also supports the hypothesized relationship (H10).

Therefore, we can conclude that it is likely that previous use would have an impact on future intention to use; and therefore, that successful implementation of electronic systems and services need to be considered in the first stages of implementation. This is because future intention to adopt and use would be likely to be affected by current and previous use and experience. It is therefore crucial to consider the users' experience (including that of employees)

when implementing large systems such as e-Government systems since many other factors, including trust in the systems, willingness to use them and also their diffusion, are more likely to be influenced by previous experiences. The previous experience and use also influence outcome expectations about the new systems and e-Services; and it is easier to build high trust and good outcome expectations from the first stages of implementing a system than rebuilding them at later stages.

6.4.3 Technical Factors (TF)

This construct comprises three factors, namely, *Perceived Simplicity* (*PS*), *Technical Quality of Service/System* (*TQS*) and *Accessibility* (*ACC*). Table 6.19 presents the interpretations of the results of the descriptive analysis. After assessing the hypothesized relationships between these factors and intention to use, it was found that *PS* and *ACC* were the most significant factors. The statistical analysis will be discussed in the following sections.

Table 6.19: Summary of the descriptive analysis of TFs from the employees' perspective

Factor	N	No. of items	Mean	S.D.	Results interpretation
PS	311	4	1.59	0.55	Very influential
TQS	311	3	1.86	0.79	Influential
ACC	311	2	1.59	0.71	Very influential

6.4.3.1 The Perceived Simplicity factor (PS)

The descriptive analysis shows *Perceived Simplicity* to be a very influential factor (see Table 6.19). This indicates that ease and simplicity of use is crucial for government employees when using e-Government systems in their work. Moreover, the results gave a strong indication that *PS* has a positive relationship with adoption and intention to use; and this supports the hypothesized relationship H11a. Furthermore, it was found from the statistical assessment that there is a positive and statistically significant relationship between *PS* and *ITU*, r_s = .369, n = 311, p<.0005. This means the more that employees perceive and experience e-Government systems as simple to use, the more they intend to accept and use it. This also supports the hypothesized positive relationship (H11a) which is demonstrated in Figure 6.20.

H11a: There is a positive relationship between perceived simplicity and intention to use e-Government systems/services.

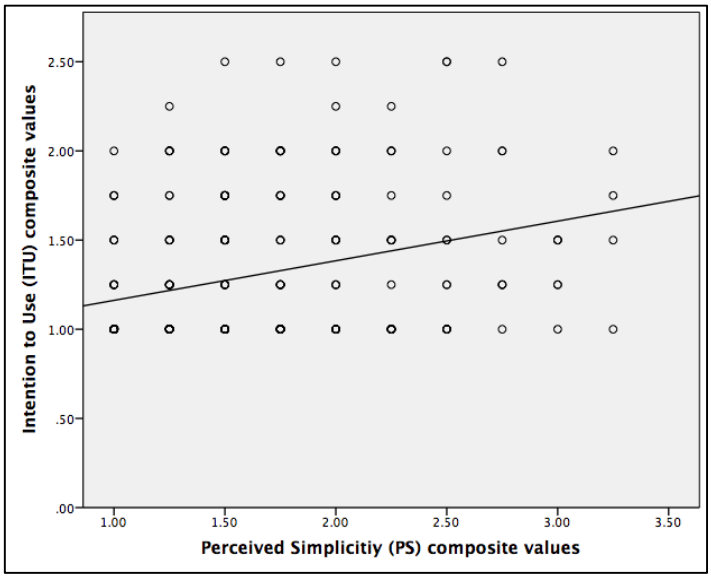


Figure 6.20: The relationship trend line between PS and ITU (government employees)

The correlation between the *PS* factor and employees' perception about the readiness of e-Government systems was also assessed. It was found that there is a positive correlation between perceived simplicity and perceived e-Readiness, r_s = .133, n = 311, p <.05. This means that the more e-Government systems are perceived to be easy and simple to use, the more the perceived e-Readiness of such systems will be positively increased. This in turn would positively influence the employees' acceptance and willingness to use. This result supports the second hypothesized relationship between *PS* and *PER* (H11b).

H11b: There is a positive relationship between perceived simplicity and perceived e-Readiness of e-Government.

To summarize these relationships, *PS* positively associates with employees' intention to use e-Government systems; and this correlation is considered to be relatively strong. In other words, the more the employees perceive that using e-Government systems in their work is easy and simple, the more they adopt them and intend to use them. Moreover, the employees' perception about the readiness of the implemented e-Government systems is positively affected and increased by their perception about the simplicity of using them. Although the second correlation was not strong, it shows that there is a positive influence of *PS* factor on the expectation of readiness. It is very likely that implementing easy-to-use systems and providing various features that facilitate use, such as a dedicated help desk, electronic manual of procedures and steps and illustrative examples of the requirements would increase the employees' willingness to use.

Marchewka et al. (2007) claimed that ease of use of a system could be a significant factor that determines the user's acceptance of information technology. Many studies that have been

conducted in different countries found that effort expectancy, which is a similar concept to perceived simplicity, has a significant influence on intention to use technology. For example, Gupta et al. (2008) conducted a study in India to explore the adoption of the use of ICTs by employees in a government organisation in a developing country. They utilised the UTAUT and found that effort expectancy had a significant positive impact on employees' intention to use ICTs. Rehman et al. (2012) also found that perceived ease of use influences the users' intention to use e-Government systems in Pakistan.

It was agreed by the interviewees in this study that the simplicity of using e-Government systems is a very important and influential factor. One of the respondents said: *"they must be easier than paper-based transactions, this is the goal of implementing these systems which is simplifying the transactions processing not making them more difficult"*. Another said: *"... ease of use would definitely affect adoption, especially for some transactions that are complicated and require many procedures; they should be easier in the electronic systems"*. One of the employees also said: *"the use of e-Transactions must be easy for both employees and customers, because if they are clear and easy to use, customers would not visit government agencies and at the same time the transactions processing will not be disrupted"*. One of the interviewees also commented on the importance of training in this respect, saying: *"... training would make use easy, and this is why training is so important"*. Another interviewee commented on the importance of providing a help department to facilitate employees' use: *"... for sure there is variation in the employees' abilities and skills, so providing a support department to respond to enquiries and solve problems immediately is important to facilitate use"*. From the analysis results and interviewees' responses, it is suggested that the *Perceived Simplicity* factor plays a vital role in the employees' adoption and use, since such use would be part of their daily work activities.

6.4.3.2 The Technical Quality of Service/System factor (TQS)

From the results of the descriptive analysis, the *Functional Quality of Service/System* factor was found to be an influential factor on employees' intention to use (see Table 6.19). As discussed earlier, this factor concerns several technical aspects that reflect the quality of service/system such as technical errors and user interfaces. Statistically, this factor also was found to be correlated positively with the employees' intention to use, $r_s = 145$, $n = 311$, $p < .05$. Therefore, the hypothesized relationship in H12a is supported.

H12a: There is a positive relationship between technical quality of service and intention to use e-Government systems/services.

However, *TQS* was not found to be as significant as the *FQS* factor from the employees' perspective. This is because some of the proposed technical aspects that reflect the quality of system were very important to the employees, and some others were less important. For example, it was agreed amongst the employees that having technical failures while using e-Government systems would reduce their willingness to use such systems. It was also agreed that the interface design and layout of e-Government internal portals would affect employees' willingness to use such systems. However, those technical aspects were not considered as important as the emergence of alert\confirmation messages when using e-Government systems in work; which was found to be the most important aspect of all those proposed. It is likely that employees in government agencies are more concerned about technical features that relate to their performance and productivity than the features that relate to the system itself. Technical aspects such as the emergence of alert\confirmation messages would reduce mistakes that negatively affect the employees' performance and productivity and might lead to their being held accountable while the other proposed aspects would not.

The majority of participating employees agreed that the current technical potential of their agencies are sufficient to implement e-Government systems (see *PER* descriptive analysis in Section 6.3), so it is likely that they perceive that the technical quality of the implemented systems is satisfactory. This does not mean that *TQS* was not important to them, but it is a matter of degree that *FQS* is a more influential factor than *TQS* for the employees. On the other hand, Ziemba et al. (2013) found that there is a significant association between technological factors and e-Government adoption in Poland. Their study focused on identifying success factors for adopting e-Government from the experts' perspective, including directors and head of departments, while the current research focused on identifying the influential factors from the employees' perspective who deal directly with customers' transactions on a daily basis. Besides the difference in the study context (Saudi Arabia and Poland), it is possible that there is a difference between managers and employees in terms of how they are influenced by different factors.

The second hypothesis (H12b) suggests a positive relationship between the technical quality of service/system and perceived e-Readiness; but the correlation test revealed that there is no positive relationship, $r_s = -.026$, $n = 311$, $p < .05$. Thus, hypothesis H12b is not supported.

H12b: There is a positive relationship between technical quality of service/system and perceived e-Readiness of e-Government.

This is probably because of the reason mentioned earlier that the participating employees perceive that the technical potential in their organisations is sufficient. Thus, the technical

quality of service (*TQS*) was not crucial for them and was not a significant factor that influenced their adoption and intention to use.

Nevertheless, there was an agreement on the importance of the technical quality of the implemented system. One of the employees said when he was asked about the impact of such factor on the employees' acceptance and use: *"Of course it has an impact, we faced many technical issues that caused delay in work"*. Technical issues are expected in any electronic system, but minimising them as much as possible is the required task. This can be achieved by considering this factor seriously. For example, one of the respondents commented on this: *"... we have out-dated computers and an infrastructure that needs to be updated and improved to reduce these issues, also the e-Transactions must be backed up so if technical problems happen, the employee's rights will be protected and also the lost transactions can be restored quickly"*. Moreover, another employee said: *"... the problem is that some agencies assign the implementation of e-Government systems to foreign companies and experts* [outsourcing]*, if problems happened later, they must seek help from the same companies that implemented the system and this would cause more problems, delay and reduce the system quality. The agencies should implement their e-Government systems themselves to control its quality, maintenance and improvement"*. Generally, although the *TQS* factor was not found to be statistically significant from the employees' perspective, organisations and e-Services providers should pay more attention to all technical aspects as they impact the employees' use and also their trust in the system.

6.4.3.3 The Accessibility factor (ACC)

The *Accessibility* factor (*ACC*) was found to be very important for the government employees; and the results of the descriptive analysis can be interpreted as indicating that the *ACC* factor is very influential (see Table 6.19). The relationship between the *ACC* factor and employees' intention to use was assessed statistically and it was found that there is a direct, positive and statistically significant correlation, $r_s = .326$, $n = 311$, $p < .005$. This result, besides the findings from the descriptive analysis, supports the hypothesis H13a and Figure (6.21) shows the relationship trend line.

H13a: There is a positive relationship between accessibility and intention to use e-Government systems/services.

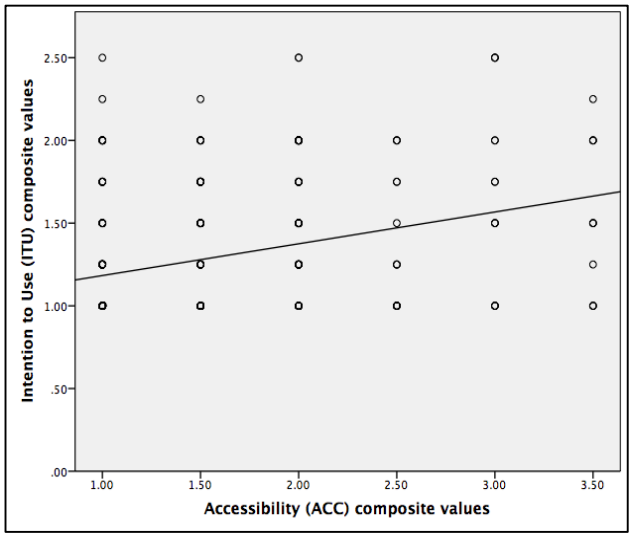


Figure 6.21: The relationship trend line between ACC and ITU (government employees)

Additionally, it was found that there is a positive correlation between the *Accessibility* factor and the employees' perception about the readiness of e-Government systems, r_s = .147, n = 311, p < .005. This also supports the relationship between *ACC* and *ITU* indirectly through *PER*. Therefore, the hypothesized relationship H13b is also supported.

H13b: There is a positive relationship between accessibility and perceived e-Readiness of e-Government.

These findings show the importance and the degree of impact of the *Accessibility* factor in increasing employees' adoption and intention to use e-Government systems in processing customers' transactions. The accessibility that employees in the sample were concerned about was electronic access to other related agencies and also the availability of efficient accessibility tools including computers, networks and other technical infrastructures. Alshehri et al. (2012) argued that lack of accessibility to other related e-Government systems in different agencies would negatively affect the success of e-Government systems and this in turn would affect the employees' adoption and intention to use. Their study was conducted in Saudi Arabia to identify the important barriers and challenges that face the adoption of e-Government systems and services from the citizens' and IT employees' (government employees) perspectives. Their study revealed that 60% of participants reported that lack of partnership and collaboration between the government sectors was considered to be an important barrier, while 40% of them reported this barrier as very important. Al-Busaidy & Weerakkody (2009) also claimed that the lack of information exchange between government agencies is a critical factor that influences e-Government implementation. Moreover, Alshehri et al. (2012) affirmed the importance and

influence of providing efficient accessibility tools that enable the employees to use e-Government systems seamlessly and efficiently; and similarly, Al-Zumaia (2001) claimed that ICT infrastructure is an essential part of successful e-Government implementation.

One of the employees interviewed mentioned the importance of the availability of improved and updated accessibility tools: *"This is a part of the system quality that the ICT infrastructure needs to be sophisticated to ensure that they (the accessibility tools) will be efficient for the future system improvements".* With regards to electronic access to other related agencies, many employees agreed on the importance of electronic cooperation and coordination. However, some of them complained about a lack of or issues with electronic cooperation. One of the employees stated that although an electronic link with other agencies is very useful, some agencies do not take this electronic cooperation seriously. This causes serious issues especially when sensitive data is involved. This is the reason that prevents many ministries from being connected with each other electronically. Another employee stated that this is one of the reasons that discourage employees to use e-Government systems. Providing efficient and sufficient ICT infrastructure when implementing e-Government systems and giving serious consideration to electronic cooperation would enable employees to cooperate and interact professionally and to process customers' transactions effectively.

6.4.4 Reliability Factors (RF)

All the reliability factors, namely, *Perceived Trust* (*PT*) and *Regulations & Policies* (*RP*) were found to be significant from the employees' perspective. Table 6.20 below summarizes and interprets the results of the descriptive analysis. The relationships between both factors and the employees' adoption and use will be discussed in the following sections.

Table 6.20: Summary of the descriptive analysis of RFs from the employees' perspective

Factor	N	No. of item	Mean	S.D.	Results interpretation
PT	311	4	2.13	0.62	Influential
RP	311	3	1.52	0.60	Very influential

6.4.4.1 The Perceived Trust factor (PT)

Measuring the influence of the *PT* factor involved different trust aspects including perceived security and perceived privacy. The results of the descriptive analysis indicated that *PT* is an influential and important factor in determining the employees' adoption and intention to use. Moreover, it was found that there is a positive and statistically significant relationship between

the employees' perceived trust and their intention to use e-Government systems in their work, r_s = .321, n = 311, p < .005. These results indicate that, as employees' perceived trust in e-Government systems increases, so does their intention to use them in their work; and this supports hypothesis (H14a).

H14a: There is a positive relationship between perceived trust and intention to use e-Government systems/services.

Additionally, a positive correlation was found between employees' perceived trust and their perception about the readiness of e-Government systems, r_s = .357, n = 311, p < .005. This finding indicates that the hypothesized relationship between *PT* and *PER* that is stated in H14b is supported. Figure 6.22 below shows the trend lines for both relationships.

H14b: There is a positive relationship between perceived trust and perceived e-Readiness of e-Government systems.

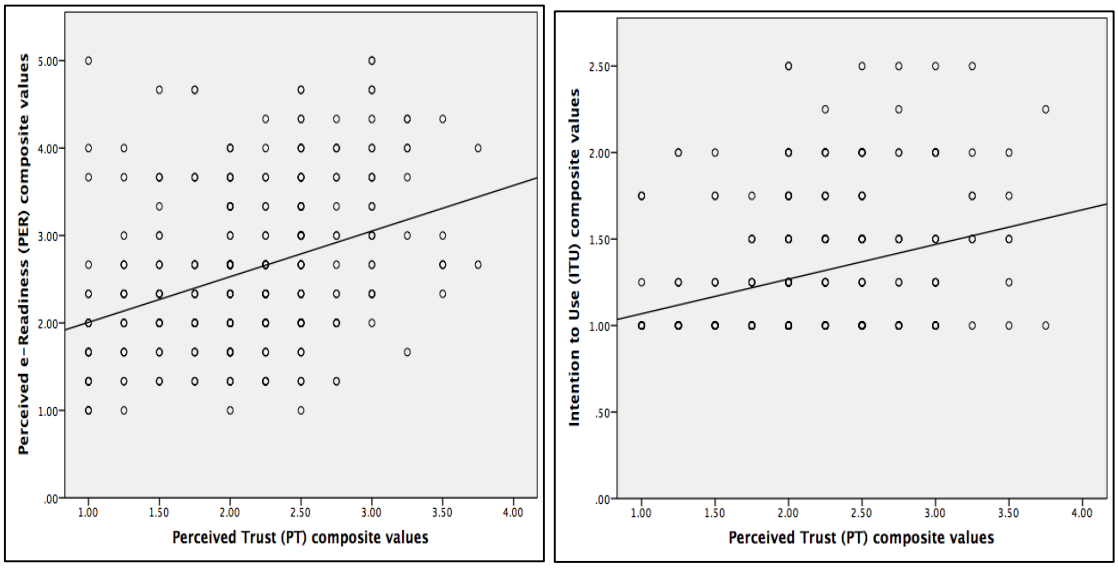


Figure 6.22: The relationships trend lines between PT and PER/PT and ITU (government employees)

The results of both the descriptive and statistical analysis show the importance of the *PT* factor and how it correlates positively with employees' adoption and intention to use e-Government systems. *PT* had positive relationships with both their intention to use and also their perception about the readiness of e-Government. It is very likely that the lack of employees' trust and confidence when using e-Government systems would negatively influence the success of e-Government implementation. Research reports repeatedly show that lack of trust hinders users' adoption and intention to use e-Government. Belanger & Carter (2008) state that, as government organisations increase spending on e-Government implementation and maintenance, it is essential that they also consider trust issues in order to implement e-

Government systems that are successful from all aspects. Thus, this research provides practical evidence that the perceived trust factor is significant in terms of increasing the employees' adoption and intention to use, which in turn contributes to the success of e-Government.

Additionally, the trust perception was generally positive according to most of the interviewed participants who agreed on the importance of this factor when using e-Government systems. One of the employees said: *"... the employee needs to trust that the e-Government system would help him to do his work successfully"*. Another employee said: *"I think that the trust in electronic systems is better because in the paper based work, documents are vulnerable to damage or loss more than in the electronic system"*. With regards to what could impact the employees' trust, one of the respondents said: *"One of the issues of the fast implementation of e-Government systems* [without proper preparation] *is that the employees' trust in using such systems will be negatively affected because they do not know how to use them"*. Furthermore, one employee stated that: *"we faced many problems with customers when we first used our electronic system, this will definitely affect the employees and also the customers' trust in the system. Many customers came to us complaining and opposing the use of electronic system because of technical issues"*. These interviewees' statements indicate that trust is likely to be influenced by various other factors such as awareness, training, technical quality of system and simplicity. Thus, the *PT* factor should be considered carefully from the start of e-Government implementation.

6.4.4.2 The Regulations and Policies factor (RP)

The importance of implementing and applying regulations, policies and terms of use that are related to the use of e-Government was found to be high for government employees. The results of the descriptive analysis revealed that this factor is very influential on employees' adoption and use. Moreover, a positive and statistically significant correlation was found between the *RP* factor and intention to use, r_s = .437, n = 311, p <.005. Therefore, the proposed positive association between *RP* and *ITU* (H15a) is supported and presented in Figure 6.23.

H15a: There is a positive relationship between properly implementing regulations & policies and intention to use e-Government systems/services.

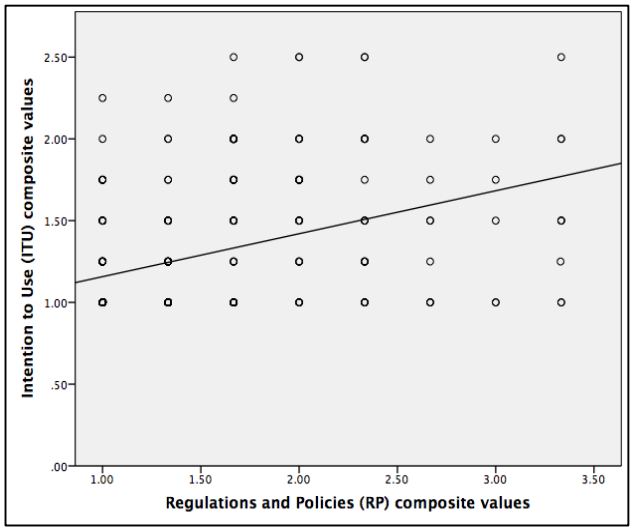


Figure 6.23: The relationship trend line between RP and ITU (government employees)

A positive correlation was also found between the *RP* factor and the employees' e-Readiness perception about e-Government systems, $r_s = .132$, n = 311, $p < .05$. This means that the second hypothesized relationship (H15b) is also supported. This result also demonstrates the positive influence of *RP* on the employees' adoption and utilisation.

H15b: There is a positive relationship between properly implementing regulations & policies and Perceived e-Readiness of e-Government systems.

The development of clear and applicable regulations, conditions, terms and rules for using e-Government systems needs to be sensitively considered when implementing such national, electronic and interactive systems. Such regulations and policies would contribute to increasing employees' confidence and trust when using technologies and electronic systems in their work. According to Alshehri et al. (2012), 63% of the participating employees considered the lack of regulations and policies related to the use of electronic systems in Saudi Arabia as an "important barrier" to the adoption of e-Government and 36% of them considered it a "very important barrier". The current research also clearly reveals that the lack of regulations and policies that regulate and control the use of e-Government systems would negatively affect the users' adoption and use.

Some of the interviewed employees believed that implementing regulations and policies for use was highly important and gave some examples to highlight its importance and how electronic systems could be thus regulated. When asked about the expected disadvantages of implementing e-Government systems in the public sector, one of the employees said: *"I think it will not have disadvantages except for the employee who does not want to work because he will*

be held accountable if he does not complete his tasks in a certain time. For example, a customer's transaction needs to be dealt with within 72 hours and if the employee did not process it, it will be electronically transferred to the department's director who would deal with it". Setting a time frame for e-Transaction processing is one of the strategies used to regulate the work. Moreover, one of the employees stated another aspect related to regulations and policies for using e-Government systems which is: *"...equal distribution of work where customers' e-Transactions are distributed equally between the employees, this is an important thing as it ensures that all employees do their tasks evenly, even the employee who is on holiday would not receive e-Transaction tasks"*. One of the respondents stated an example of the negative impact of the lack of regulation: *"when a customer cannot perform an e-Transaction successfully, he\she come to us to seek help from the employees, this might cause a problem for the employee who helped him\her as the customer could deny the procedure that has been done by the employee"*. The employee stated that this issue usually happened since the employee needs to log in from the customer's account in this case. As the interviewee stated, if this practice is not regulated, the employees' right could be negatively affected. Therefore, the results and respondents' statements suggest that *RP* is a crucial factor that needs to be considered in order to control and regulate the use of e-Government systems and also to preserve employment rights.

6.4.5 Perceived E-Readiness (PER) and Intention to Use (ITU)

Perceived e-Readiness was proposed as a dependent variable in the research model (EGAUM). It was also proposed that this variable correlated with several independent variables including *PS*, *TQS*, *ACC*, *PT* and *RP*. The correlations between *PER* and all these factors were investigated in order to explore the positive associations that show the impact of each factor. Similar to the findings from the citizens' sample, only the *Perceived Trust* (*PT*) factor was found to have a significant and positive correlation with the *PER*; all the other correlation tests with this variable showed either weak positive relationships or that no positive relationship was supported .

The correlation between *PER* and *ITU* was also assessed using Spearman's correlation test. It was found that there is a statistically significant positive correlation between the employees' perceived e-Readiness and their intention to use e-Government systems, $r_s = .196$, n = 311, $p < .005$. Thus, the hypothesized relationship in H16 is supported.

H16: There is a positive relationship between perceived e-Readiness of e-Government and intention to use e-Government systems/services.

Due to this positive relationship between *PER* and *ITU*, almost all factors were found to have a positive impact on the employees' perceived e-Readiness, including the *PS*, *ACC*, *PT* and *RP* factors, thus also having an indirect positive influence on intention to use e-Government systems. This means that the *PS*, *ACC*, *PT* and *RP* factors have a positive direct influence and also a positive indirect (through *PER*) influence on employees' intention to use.

6.5 Conclusion

In this chapter, a detailed presentation and discussion of the descriptive analysis of salient factors that influence the employees' adoption and use has been given; including a discussion about the items used to measure the influence of each factor. The results of the descriptive analysis were interpreted to support or refute the hypothesized relationships between the proposed factors and the employees' intention to use e-Government systems. Moreover, these relationships were also assessed statistically utilising Spearman's correlation procedure; and the results of the statistical analysis were also used to support or reject the hypotheses. Furthermore, interviewees' responses were also presented and discussed. Table 6.21 summarizes the findings of the statistical evidence that explains all the hypothesized relationships from the government employees' perspective.

Table 6.21: Summary of the results of the hypothesized relationships in the government employees' sample

Hypothesized relationship	Direction of relationship	Hypothesis test	Relationship strength
PB → ITU	**Positive**	**Supported**	**Moderate *(r_s = 0.462**) sig***
SC → ITU	**Positive**	**Supported**	**Moderate *(r_s = 0.342**) sig***
AW → ITU	**Positive**	**Supported**	**Moderate (r_s = *0.388**) sig***
FQS → ITU	**Positive**	**Supported**	**Moderate *(r_s = 0.427**) sig***
PE (EGOV) → ITU	Positive	Supported	Weak *(r_s = 0.223**) sig*
PS→ ITU	**Positive**	**Supported**	**Moderate (r_s = *0.369**) sig***
PS→ PER	Positive	Supported	Weak (r_s = *0.133*) sig*
TQS → ITU	Positive	Supported	Weak (r_s = *0.145*) sig*
TQS → PER	Negative	Not supported	Weak (r_s = *-0.026)*
ACC → ITU	**Positive**	**Supported**	**Moderate (r_s = *0.326***) sig**
ACC → PER	Positive	Supported	Weak (r_s = *0.147**) sig*
PT → ITU	**Positive**	**Supported**	**Moderate (r_s = *0.321**) sig***
PT → PER	**Positive**	**Supported**	**Moderate (r_s = *0.357**) sig***
RP → ITU	**Positive**	**Supported**	**Moderate *(r_s = 0.437**) sig***
RP → PER	Positive	Supported	Weak *(r_s = 0.132*) sig*
PER → ITU	Positive	Supported	Weak (r_s = *0.196**) sig*

*. Correlation is significant at the 0.05 level. **. Correlation is significant at the 0.01 level.

Several factors were found to be significant from the employees' perspective; i.e. *Perceived Benefits* (*PB*), *Socio-Cultural* (*SC*), *Awareness* (*AW*), *Functional Quality of Service/System* (*FQS*), *Perceived Simplicity* (*PS*), *Accessibility* (*ACC*), *Perceived Trust* (*PT*) and *Regulations & Policies* (*RP*). This research suggests that such factors play a crucial role in the public employees' adoption and intention to use. Thus, government agencies and e-Services providers should consider them when designing and implementing e-Government systems. Recommendations based on the results from this sample will be developed and presented in Chapter 8.

Chapter Seven: Data analysis and discussion from the business sector's perspective

7.1 Introduction

One of the main stakeholders targeted by e-Government services is the business sector. This sector, which is also known as the private sector in Saudi Arabia, has grown considerably in recent years. The growth rate for the private sector is the highest of the three main sectors in Saudi Arabia, namely, the government, private and oil sectors (Al-Jazirah, 2015). Therefore, facilitating communication and interaction between government agencies and the business sector; i.e. business companies, is very important especially in the currently advanced IT era. Many online e-Services have been provided to the private sector in Saudi Arabia in recent years, and there are more e-Services under development. Besides the general need to increase the adoption and utilisation level of e-Government systems and services, it is also crucial to understand the factors that can influence the adoption and usage from the business sector's perspective, which is one of the objectives of this research.

The total number of participating business entities in this sample was 53 and there were 48 valid responses identified after the data validating and preparation process. Most of these were large leading companies; but several medium and small business entities were also involved in this sample. In order to provide more comprehensive results, the participating business entities were all involved in different business activities; and the sample included both business owners and employees who work in firms and deal with government agencies with regard to their companies' transactions. Moreover, short, semi-structure interviews were conducted with 5 of the participants. The targeted users from the business sector are usually busy and they sometimes work outside their offices since part of their jobs is to visit government agencies to complete their companies' transactions. Therefore, multiple visits to their offices were needed to collect data from them and this is reflected in the relatively small sample. However, although the sample size is relatively small compared to the other two samples, this research provides useful insights into the motivations underlying the intentions to adopt and use e-Government services from the business sector perspective. It is also worth bearing in mind that the participants in this sample represent their business entities because they are either owners or companies' employees who deal with government transactions and services; and that usually the number of such employees in each company is small, sometimes only one or two, even in large companies.

This chapter analyses the collected data (descriptive and statistical analysis) and discusses the results to assess the influence of the proposed factors on the adoption and use of the users from the business sector; and the most significant factors are identified. This chapter is divided as

follows: Section 7.2 presents and discusses the demographic data of this sample. The findings from the descriptive analysis are provided in Section 7.3; then, Section 7.4 investigates and statistically assesses the hypothesized relationships between the proposed factors and users' intention to use. This section also discusses the results from the semi-structure interviews. Section 7.5 provides a conclusion that summarizes the results and the most significant factors from the business sector's perspective.

7.2 Demographic data

This section presents the demographic data of the participants from the business sector. The participants were asked to respond to a survey entitled "Analysing key factors that influence the adoption and utilisation of e-Government systems: Users from the business sector". The survey collected demographic data about the participants themselves and the business entity that they either own or work for. The personal demographic information includes gender, age group, education level, position held in the company (owner or employee), proficiency in using computers and Internet use rate. The demographic data also relates to the business entity itself, and includes the age of the business, number of employees, business income (annually net profit) and business field. The survey also collected information about the use of e-Government services provided to the business sector and what methods the participants use to access government services and conduct transactions for their business entities. Table 7.1 below presents a summary of the demographic data for the business sector sample.

Table 7.1: Demographic data for the business sector sample

		Percentage %
Participants' gender	Male	89.6
	Female	10.4
Participants' age in years	18 – 30	20.8
	31 – 45	64.6
	46 – 60	12.5
	Over 60	2.1
Participants' educations level	Secondary school or less	29.2
	Diploma	20.8
	Bachelor	41.7
	Master	8.3
Proficiency in using computers	Average	8.3
	Good	41.7
	Excellent	50
Internet usage rate	Several days a week	6.3
	Several days a month	2.1
	Everyday	91.6
Participants' position in the company	Owner	27.1
	Representative	18.8
	Employee	54.2

Age of the business entity in years	0 – 5	16.7
	6 – 10	16.7
	11 – 20	10.4
	More than 20	56.3
Number of employees in the business entity	0 – 10	18.8
	11 – 50	8.3
	51 – 250	4.2
	More than 250	68.8
Annual net profit in SAR (1 GBP ≈ 4.7 SAR)	0 – 60,000	10.4
	61,000 – 120,000	4.2
	121,000 – 180,000	2.1
	181,000 – 240,000	4.2
	More than 240,000	35.4
	Unknown	43.8
Business activity of the entity	Constructing and building	14.6
	Restaurants	2.1
	Food supply and grocery	4.2
	Car trade (sales and hire)	12.5
	Communication	6.3
	Health and medical supplies	14.6
	Other	45.8

Participants' gender

Table 7.1 reveals that 89.58% of the participants were male, whereas 10.42% were female. As stated earlier with the previous samples (citizens and public employees), one of the main barriers and difficulties in this research was to collect data personally from females in Saudi Arabia due to religious and cultural reasons. Female business owners or employees in the business sector were no exception. Therefore, a relatively small percentage of female participants were involved in this sample. However, the sample can still said to be representative of e-Government users in the business sector; as most of the employees who work in the private business sector and use e-Government services as part of their job activities are male employees. This is mainly because the jobs that involve dealing with government agencies and conducting government transactions were almost exclusively done by men before the implementation of e-Government in Saudi Arabia. Therefore, men still dominate these kinds of job, due to their experience of dealing with government services. Moreover, many e-Transactions and e-Services that are provided to business sector through e-Government systems still require personal visits to the government agencies. This task is difficult for females for several reasons including difficulties with transportation and the necessity of frequent visits to different agencies that may not have female sections.

Participants' age

Table 7.1 also shows that participants aged between 31-45 years represent the majority of the sample (64.58%), participants aged between 18-30 years represent 20.83% of the sample, participants aged between 46-60 years represent 12.50% and participants aged over 60 years represent only 2% of the total sample. These age group percentages were expected, since a large proportion of the participants were employees who work in this kind of job that is normally occupied by middle-aged employees (between 25-49 years) in Saudi Arabia (Saudi General Authority for Statisctics, 2016b, p.55).

Participants' education level

Table 7.1 shows that 29.17% of participants completed secondary school level or less and 20.83% of them had a diploma degree. The majority of participants held a Bachelor's degree (41.67%) and participants who obtained a Master's degree represent 8.33% of the total participants. All the participants were educated, and this was expected since using e-Government services especially in business sector requires educated individuals with reasonable knowledge of how to use computers and the Internet to perform e-Services and e-Transactions.

Participants' proficiency in using computers

Table 7.1 shows that half the participants (50%) believed they had an excellent level of proficiency in using computers, 41.67% of them said they had a good level of proficiency and only 8.33% of participants rated themselves as of average proficiency. Proficiency in using computers is generally high amongst the participants and this is expected, as generally speaking, the higher the participants' level of education, the higher their perceived level of computer skills.

The participants' Internet use rate

Table 7.1 also shows that 91% of the participants are daily Internet users; approximately 6% of them use the Internet several days a week; whereas just 2% use the Internet several days a month. Since a large proportion of the participants were employees in the business sector, using the Internet is very likely to be one of their daily job activities, including carrying out government transactions online; thus, a high percentage of daily Internet use was reported.

E-Government service usage

Over 95% of the participants have used e-Government services and transactions for their business entities, whereas only 4.2% have not. The reasons that prevent some participants from using e-Government services were also collected; and one of these reasons was lack of trust in e-Government systems. This reason was reported by a business owner aged between 31-45 years old who had only completed public school and preferred to visit government agencies in person to conduct business transactions. This preference for conducting transaction in person may reflect this participant's low level of education and hence an inability to effectively conduct transactions online owing to a lack of IT skills. Another reason was that the e-Services required are not always actually provided through e-Government systems; as was reported by an employee aged over 60 years. Indeed, several government services and transactions that companies need to access and conduct have not been introduced online through e-Government yet.

Non-government online service usage

Information about the use of non-government online services by participants, such as online banking and online purchasing, was also collected. About 66.67% of participants have used some form of non-government online service, whereas 33.33% of them have not. The non-users group was investigated further and it was found that 75% of them were employees in the participating businesses. Thus, it is likely that other employees in different departments of the business, such as the finance department, were responsible for non-government transactions. The rest (25%) of the participants who have not used such online services were business owners; and they might not need to perform non-government online services for their businesses.

Methods to obtain information related to government services

The participants were asked how often they use certain methods to obtain information that they need to conduct government transactions on behalf of their companies. Such information includes agency working hours, agency sub-offices, the services provided and the transactions requirements and procedures. Several methods were presented to the participants to determine how often they use them and these are shown in Figure 7.1.

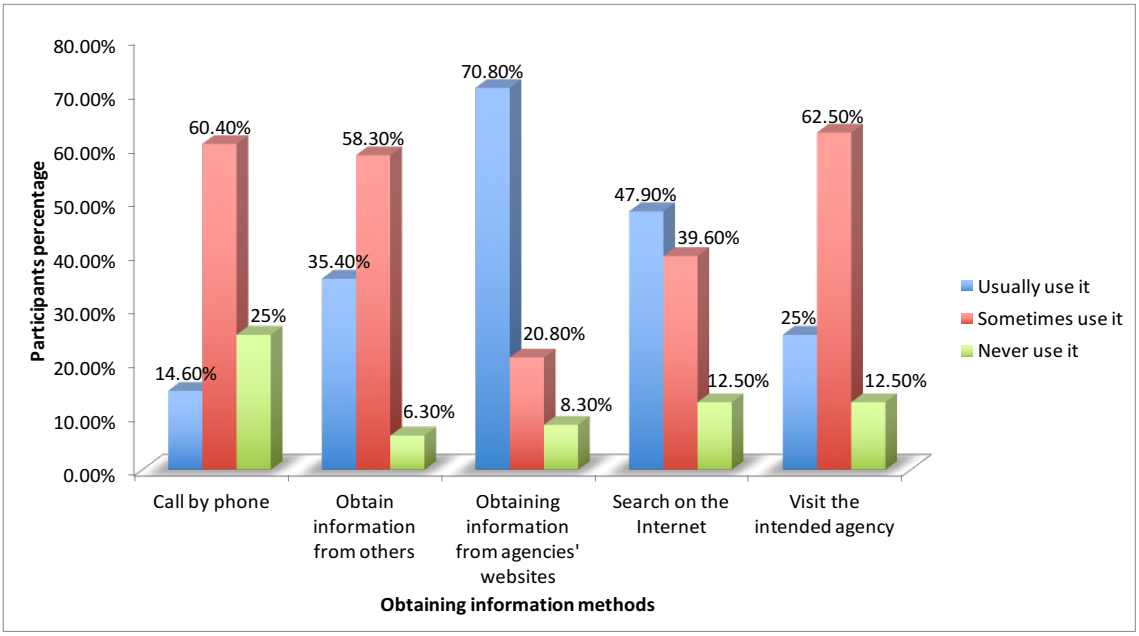


Figure 7.1: Methods of obtaining information about government transactions (business sector) (see appendix G for larger graph).

We can see immediately that over 70% of the participants usually obtain information from the agencies' websites, whereas 47.90% of them reported that they usually search for the needed information on the Internet. It is thus a relatively high percentage of participants who usually use online means to obtain the information they need for their businesses' government transactions. Approximately 35% of the participants usually obtain information from other users who have used the same service; 25% of users usually visit government agencies to obtain the needed information, whereas 14.6% of them usually call the agencies by phone for the same purpose. We can notice that the online methods (visiting agencies' websites or the Internet) were the most frequently used methods, whereas other methods were less frequently used. This means that there is a higher intention to use electronic means to get information about e-Government services than intention to use traditional ways.

Although high percentages of the participants reported that they usually use online methods to obtain information about needed government transactions; they also reported that they sometimes use three traditional methods; namely, visiting the agencies, calling by phone and obtaining information from others (62.5%, 60.4% and 58.3%, respectively). 39.6% of participants reported that they sometimes search on the Internet for the required information, whereas 20.8% of them responded that they sometimes obtained the information from the agencies' websites.

Furthermore, 25% of the participants never call government agencies to obtain information; and the graph also shows that 12.5% have never visited the agencies to obtain information and the same percentage also reported that they have never searched for information they need for their

government transactions on the Internet. A relatively small proportion of the participants (8.3%) never used the agencies' websites to obtain information. Moreover, only 6.3% of the participants reported that they have never obtained the required information from others.

Preferred methods of conducting government transactions for businesses

Information about preferred methods of conducting government transactions was collected from the participants; who were asked about their preferences rather than actual usage (similar to the previous question) in order to include all the participants either e-Government users or non-users. Almost all the possible methods of performing governmental transactions are proposed and they include online through e-Government, by visiting the agencies in person, through service offices, authorising other employees or authorising someone else. The results are presented in the following combined graph (Figure 7.2).

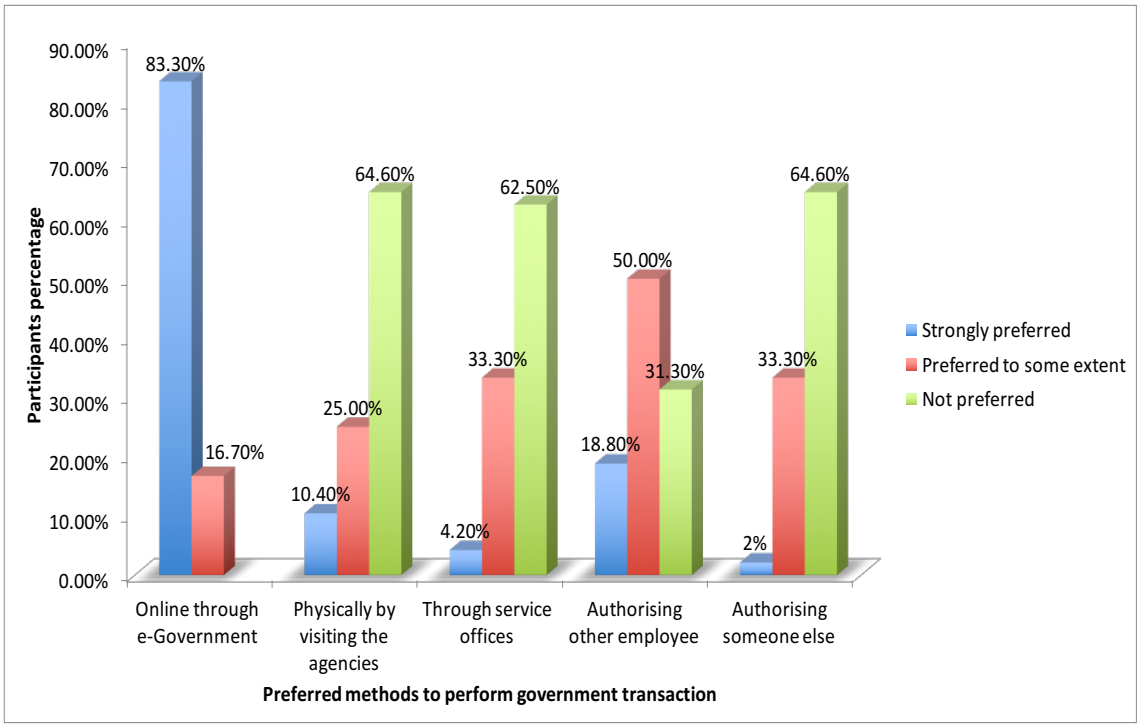


Figure 7.2: Preferred methods to conduct government transactions (business sector) (see appendix G for larger graph).

The chart reveals that conducting government transactions online via e-Government systems is the most preferred method, with 83.3% of the total participants strongly preferring this method; 16.7% preferring it to some extent; and none of the participants indicating they did not prefer to use e-Government systems. This shows that the vast majority of participants had a high level of intention to use e-Government systems.

Conversely, large proportions of the participants did not prefer to use the other methods proposed. This is clear from the very low percentages of the answer "strongly preferred" for the

rest of the methods, and also from the high percentages of the answer "not preferred" for these same methods. For example, the percentages of participants who strongly prefer authorising other employees, visiting the agencies in person, using services offices and authorising someone else were reported at 18.8%, 10.4%, 4.2% and 2% respectively. Moreover, more than 64% of the participants did not prefer visiting the agencies' offices and also the same proportion did not prefer to authorise someone else to complete government transactions for their businesses. A similar percentage of participants (62%) did not prefer using service offices to complete government transactions on their behalf. Overall, using e-Government systems to carry out and complete government transactions and access services related to the business was the most preferred method.

Age of business

Table 7.1 also presents the age of the participating businesses i.e. how long have they been established. The age of approximately 56% of the participating businesses was over 20 years; 16.67% of the participating businesses were between 0-5 years, and a similar percentage was between 6-10 years. Finally, 10.42% of the business entities were aged between 11-20 years. We can notice that the majority of the businesses involved in the study (more than 66.67%) were established before the e-Government program was introduced in Saudi Arabia in 2005. This means that this sample included businesses that have experienced government transactions in both traditional and electronic ways.

Number of employees in the participating businesses

Around 68.75% of the businesses included in this sample have more than 250 employees; 18.75% have up to 10 employees, 8.33% of them have between 11-50 employees and 4.17% of them have between 51-250 employees. It is clear that the majority of the participating business entities were large companies with more than 250 employees. This is very useful for the results of this research since large companies normally need to perform more government transactions than the smaller companies.

The annual net profit of participating businesses

Table 7.1 shows the annual net profit of the participating companies in Saudi Riyals. The survey asked all the participants to state the annual income of the firm they work for or own. Approximately 43% of participants did not know this figure. For those that did know, the results show that businesses with an annual net profit of more than 250K SAR represented 35.42% of the total sample. The net profit was between 0-6K SAR for 10%, between 61K-120K SAR for 4%, between 121K-180K SAR for 2% and between 181K-250K SAR for 4% of the

participating business entities. The annual net profit was relatively high for the majority of the business entities. This means that the majority were large companies and thus more likely to need to access government services and conduct transactions.

The business activity of the participating companies

The business activities, or business field, of the participating firms were varied and they are presented in Table 7.1. Construction companies make up 14.6% of the participating businesses, as do companies that work in the field of health and medical facilities. Companies that trade in cars, either selling or hiring cars, make up 12.5% of the total participating companies; and firms that trade in the field of communications 6.25%; firms that supply food and groceries 4.17% and restaurants approximately 2%. The rest of the participating businesses (45.8%) operated in different business areas including the clothes trade, operations and maintenance activities field, fragrance trade, electric supply, furniture trade, safety and security operations field, tourism activities field, flowers and gift selling, beauty firms and transportation. This diversity in commercial activities of participating businesses is useful for this research as it provides a broad commercial perspective of adoption and use of e-Government by the business sector.

7.3 Descriptive analysis of the proposed factors from the business sector's perspective

This section will present and discuss the results from the descriptive analysis of all the constructs involved in the EGAUM. Several items were used to measure the influence of the proposed factors using different Likert scales. The Likert scores will be used to interpret the results of each factor. More details about the descriptive statistics can be seen in Appendix C.

The Perceived Benefits (PB) factor

For the *Perceived Benefits* (*PB*) factor, the participants were asked several questions (7 items) to measure the influence of this factor on their adoption and utilisation of e-Government systems. Table 7.2 presents all the items involved and the results are shown in Figure 7.3.

Table 7.2: The PB factor measured from the business sector's perspective

Constructs	Item code	Measure
Perceived Benefits	PB1	EGOV would enable me to perform my company's transactions quicker than traditional ways.
	PB2	Using EGOV for my company's transactions would save time, money and effort.
	PB3	I believe that using EGOV would minimize legal and regulatory violations that might occur in my company.

PB4	Using EGOV would help my company to comply with all government procedures and requirements.
PB5	I believe that using EGOV would ensure equality in transaction processing amongst companies.
PB6	I believe that EGOV would increase investment opportunities in the business sector, e.g. online government tendering
PB7	I believe that using EGOV would reduce procedures that might delay processing my company's transactions.

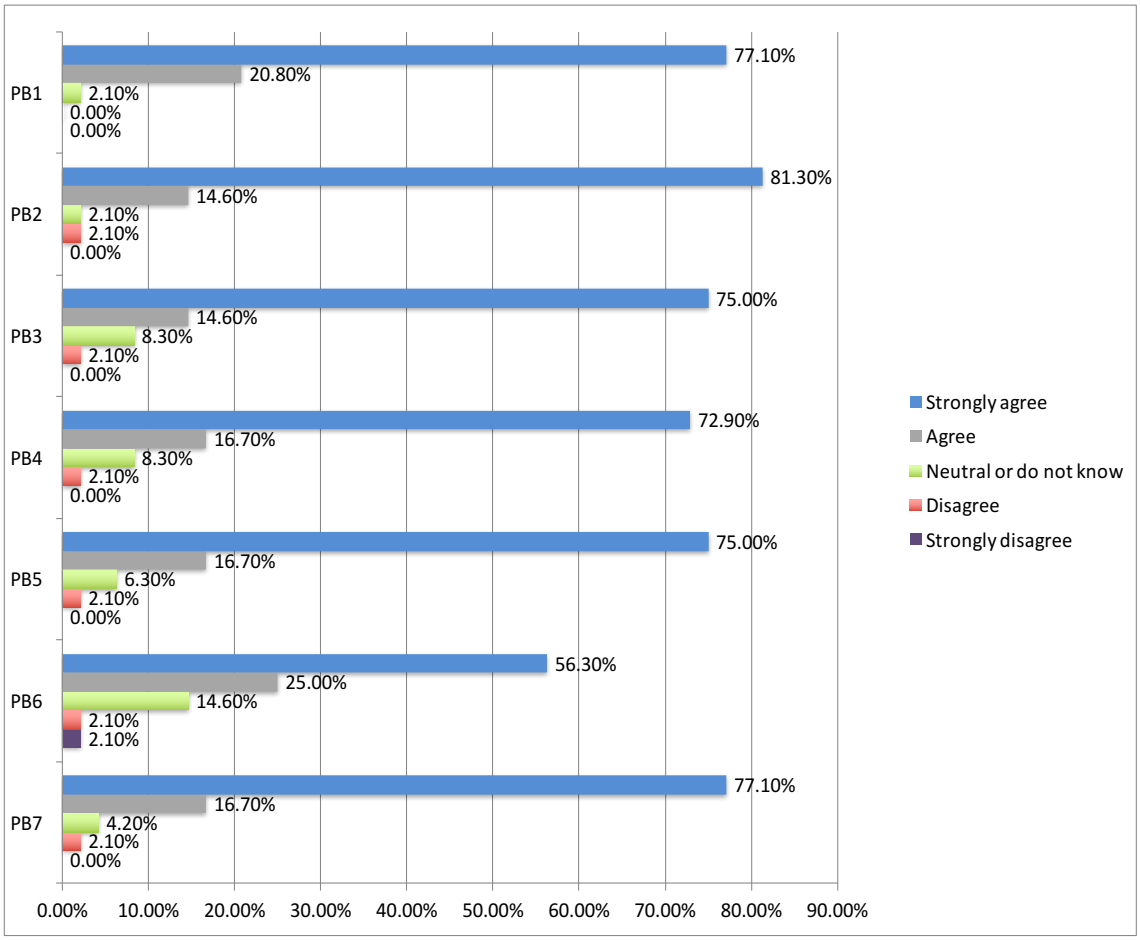


Figure 7.3: The results of PB measurement items (business sector) (see appendix G for larger graph).

In item PB1, the participants were asked whether they agree that e-Government would enable them to conduct their business's transactions more quickly than with the traditional ways. Figure 7.3 shows that the majority of the participants (97.9%) agreed whereas 2% were neutral. The Likert score for this item is 1.25, revealing high agreement about this benefit of using e-Government systems over the traditional ways; there was also a general agreement that the use of e-Government would save time, money and effort (item PB2). Approximately 95% of the total participants agreed about this benefit but only 2% of them did not agree. The total score of item PB2 is 1.25 and this also indicates high agreement level on the ability of e-Government

systems to save time, money and effort when using them with transactions and services related to the business sector.

From the result of item PB3, more than 89% of the participants agreed that the use of e-Government services would reduce legal and regulatory violations in the business sector. Around 8% were neutral and only 2% did not agree. The Likert score is 1.37 and this indicates a general perception amongst the participants about the benefit of protecting their businesses and companies from violation of the laws and regulations. Additionally, respondents were asked in item PB4 to indicate whether they believe that using e-Government would help their businesses to comply with all government procedures and requirements. As shown in Figure 7.3, more than 89% of the respondents agreed about this benefit, with a very small percentage disagreeing (2%) and only 8% of the respondents saying there were neutral or did not know. The Likert score is 1.39 which also indicates a generally positive perception about the ability of e-Government systems to make complying with government procedures and requirements easier for businesses.

With regards to item PB5, it is apparent from Figure 7.3 that the overwhelming majority (91%) of respondents agreed that the e-Government systems would ensure equality for business sector in terms of processing their transactions and applications. This high agreement gives a Likert score of 1.35 which suggests that implementing e-Government systems is perceived by the business sector as ensuring equal and fair dealings from the government agencies with regards to business transactions. Additionally, Figure 7.3 shows that 81% of the total respondents agreed with the statement of item PB6: "I believe that e-Government would increase investment opportunities in business sector, such as online government tendering" whereas 4% disagreed and 14% were neutral. The Likert score of 1.68 indicates a generally positive perception that implementing e-Government systems would offer more investment and commercial opportunities to the business sector.

In item PB7, the participants were asked their view on whether using e-Government would reduce procedures, such as document ratification, that might delay processing their companies' transactions. The vast majority (93%) agreed that the use of e-Government would reduce these procedures, only 2% did not agree and around 4% were neutral (see Figure 7.3). The Likert score for this item is 1.31 indicating a high level of perception about the ability of e-Government to speed up the processing of business transactions. The composite score for this factor was 1.37 which gives a strong indication that the *Perceived Benefits* factor has a strong impact on the participants' adoption and utilisation level. This result was tested to detect possible outliers and there was only one case. There was no significant impact from the detected case as the composite score change to 1.33 after omitting the detected case.

The Social-Cultural (SC) factor

The participants were asked to respond to 5 items to measure the influence of the *SC* factor. These items are listed in Table 7.3, and the results are shown in the combined graph in Figure 7.4.

Table 7.3: The SC factor measured from the business sector's perspective

Constructs	Item code	Measure
Socio-Cultural	SC1	I feel that dealings between the business sector and the government should be real and tangible (i.e. paper-based).
	SC2	I believe that EGOV would reduce the influence of *wasta* when processing companies' transactions.
	SC3	Using EGOV would reduce the negative influence of some uncooperative employees in processing companies' transactions.
	SC4	I feel that EGOV systems are monitoring systems for the business sector more than as service systems.
	SC5	The use of EGOV by other business entities/colleagues would encourage me to use it for my company's transactions.

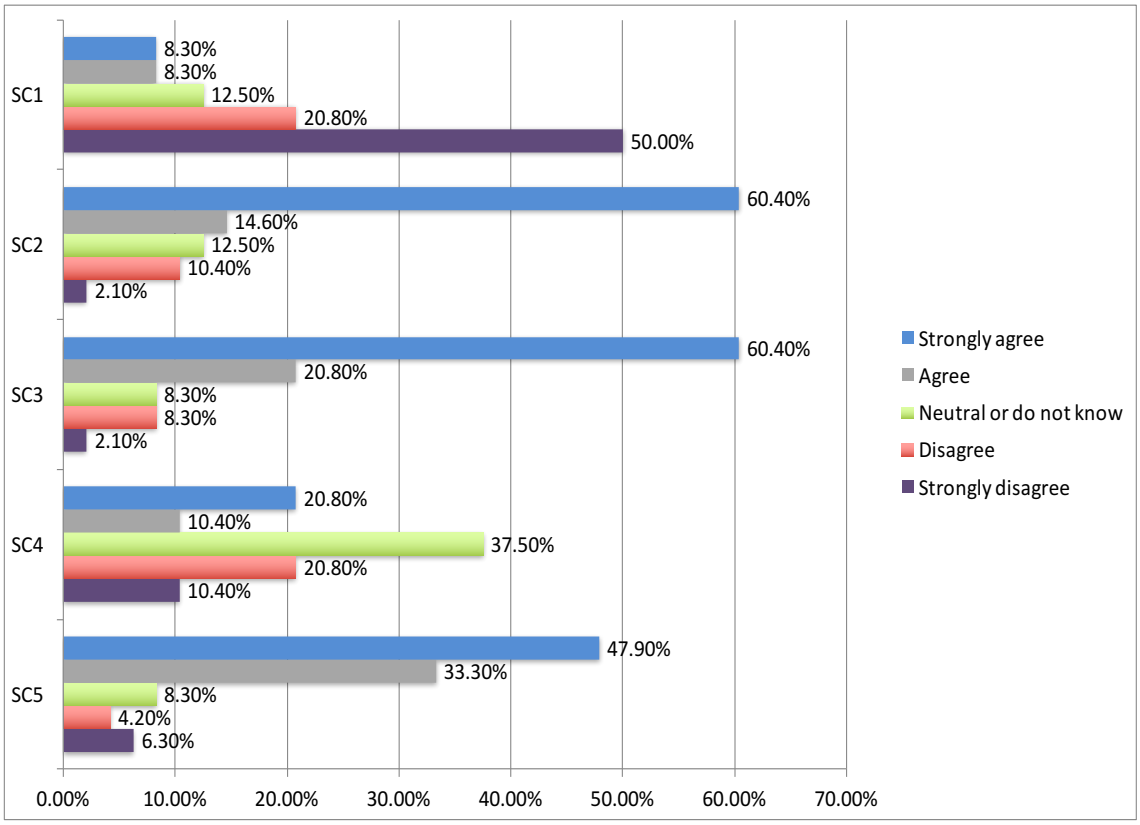


Figure 7.4: The results of SC measurement items (business sector) (see appendix G for larger graph).

In item SC1, the respondents were asked whether dealing with government agencies regarding their companies' transactions should be real and tangible i.e. with paper documents rather than

electronically. Figure 7.4 shows that 70% of the respondents disagreed, 16.6% agreed and 12.5% were neutral or did not know. The Likert score for this item is 3.95, revealing the participants' willingness to use electronic methods when dealing with government agencies. With regards to item SC2, the respondents largely agreed with the statement: "I believe that implementing e-Government systems would reduce the influence of interpersonal relationships (*wasta*) when processing companies' transactions". Figure7.4 shows that the 75% agreed with this statement while 12.5% did not agree. The Likert score of 1.79 indicates a high positive perception amongst the participants about the ability of e-Government to reduce the use of this negative socio-cultural aspect, (interpersonal relationships or *wasta*), to violate regulations or speed up some transaction processing at the expense of others.

Respondents were asked in item SC3 to indicate if they think that "Using e-Government systems would reduce the negative influence of some uncooperative employees in processing companies' transactions". It can be seen from Figure 7.4 that a large proportion of respondents (81%) agreed with this statement; a small number (10%) disagreed and about 8% gave a 'neutral or do not know' answer. The Likert score for this item is 1.70 indicating a general belief amongst the participants about that e-Government would reduce the chances of rejection or delays in transaction processing which might occur with some uncooperative government employees due to several reasons such as staff negligence or laziness.

With regards to the results of item SC4, Figure 7.4 reveals that 31% of respondents believed that e-Government are implemented to monitor the business sector more than providing services to it and equally the same percentage did not believe that. The majority of participants (37%) was neutral or did not know. The Likert score for this item is thus 2.89, indicating uncertainty amongst the participants about whether e-Government systems are implemented to monitor systems more than as service systems or not. When investigating the percentage of participants who respond with a "Do not know or neutral" answer, it was found that most of them (66.6%) were employees. Arguably, employees probably care about their performance at work more than about knowing the objectives of implementing e-Government; thus they may not have considered whether e-Government systems are implemented for monitoring purposes more than for providing services or vice versa. Another possibility is that users from business sector may generally not care about whether the main purpose of implementing online systems is for monitoring or providing services, as long as they can benefit from such systems. In both situations, this cultural belief, which relates to the feeling of being monitored by government agencies through electronic systems, does not show much influence on the adoption and utilisation of users in the business sector.

In item SC5, respondents were asked whether they would be encouraged to use e-Government services for their companies' transactions if other businesses or other colleagues used them. It is clear from Figure 7.4 that the overwhelming majority (81%) agreed, around 8% were neutral and 10% disagreed. These results gave a Likert score of 1.87 which indicates a high level of influence by this social aspect (the influence of others). Additionally, the composite score for the *SC* factor is 2.44, and this gives an indication that the SC factor is likely to influence the adoption and utilisation of e-Government systems from the business users' perspective.

The Awareness (AW) factor

Respondents were asked two groups of questions with two different 5-point Likert scales. The first group (*AW* part1) comprises three items and the 5-point Likert scale for this group ranges from "Strongly agree" to "Strongly disagree". The second group of questions (*AW* part2) comprises six items and the 5-point scale used for this group ranges from "Very influential" to "Very uninfluential". Table 7.4 shows the items in both groups:

Table 7.4: The AW factor measured from the business sector's perspective

Constructs	Item code	Measure
Awareness	**AW part1**	
	AW1	I feel that I have good knowledge about Saudi EGOV benefits, features and services that are provided to business sector.
	AW2	Offering workshops and visual presentations about EGOV for businesses would encourage me to attend and know more.
	AW3	I am satisfied with the current awareness campaigns and advertising about EGOV potential and services.
	AW part2	The degree of influence of several advertising methods on willingness to use EGOV:
	AW4	• Advertisements on social media
	AW5	• Advertisements on government agencies' websites
	AW6	• Advertisements in newspaper and magazines
	AW7	• Advertisements on TV and radio channels
	AW8	• Advertisements in public areas
	AW9	• Advertisements through emails and text messages

AW part1

The first part seeks to evaluate the participants' awareness and measure the influence of the *Awareness* factor on their adoption and utilisation of e-Government systems. Figure 7.5 presents the results for all items involved.

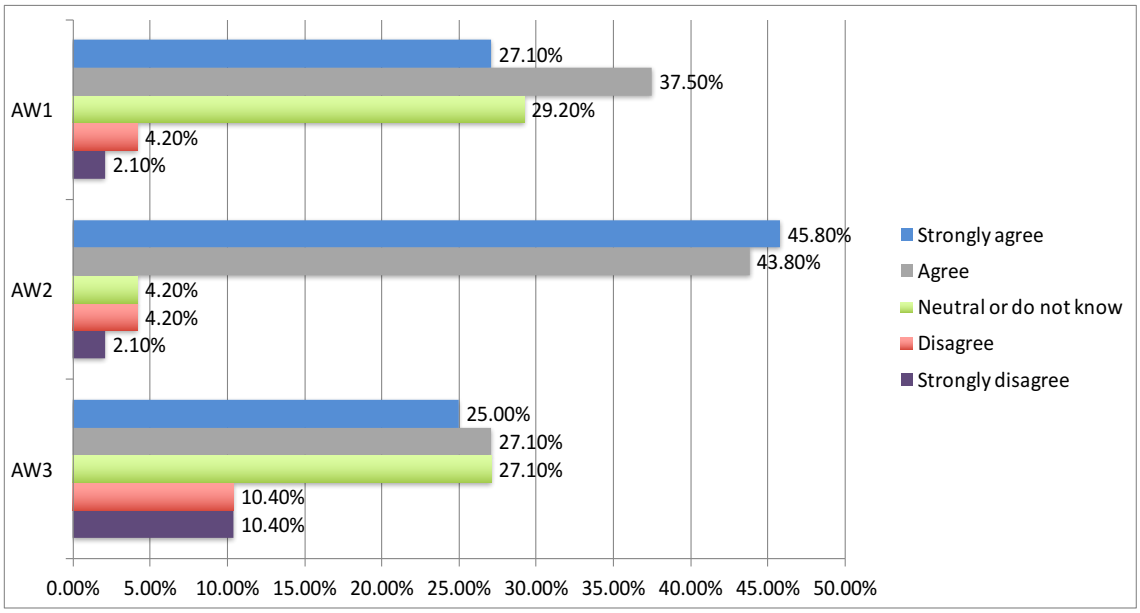


Figure 7.5: The results of AW part1 measurement items (business sector)

Item AW1 measures whether the respondents feel that they have good knowledge about the benefits, potential and services that the Saudi e-Government provides to the business sector. Figure 7.5 shows that around 64% of the participants felt that they had good knowledge about e-Government potential and services, while 6% did not feel that, and 29% were neutral or did not know. The reason for having a somewhat high percentage of neutral or do not know responses is possibly because some participants do not know much about e-Government potential and services due to lack of advertisements and awareness campaigns, so they did not feel that they had good knowledge about such benefits and services. The Likert score is 2.16, which indicates a relatively high level of awareness but not as much it could be.

The respondents were also asked in item AW2 whether offering workshops and visual presentation about the potential and services of e-Government systems would encourage them to attend to know more. Figure 7.5 shows that more than 89% would, around 4% were neutral or did not know and only 6% would not be interested. The high level of agreement indicates that the majority of respondents have a willingness to know more about benefits, potential and e-Services that e-Government provides for the business sector. The results for this item (AW2) and the previous item (AW1) support the assumption that there is a lack of activities that aim to increase awareness levels, since most respondents were interested in attending awareness-raising activities. If such activities were provided sufficiently, the feeling of having a good level of knowledge would likely be higher. The Likert score for item AW2 is 1.72 which suggests that providing activities such as workshops, courses and public presentations about the benefits, potential and services of e-Government systems would be very likely to increase awareness levels, and therefore increase the adoption and utilisation of such systems.

With regards to item AW3, about 52% were satisfied with the current awareness campaigns, 20% were not satisfied and 27% of the participants were neutral or did not know. The percentage of "neutral or do not know" responses was relatively high and this is similar to the percentage in item AW1. Although the majority were satisfied, the percentage of neutrality or do not know answers indicates a lack of awareness about these activities, indicating that e-Services marketing and awareness campaigns may not have reached the respondents and thus, they did not know whether they were satisfied or not. The Likert score is 2.54 which indicates a reasonable level of satisfaction (just over half of respondents) with the current status of e-Government benefits and services marketing.

The composite score of this part is 2.14. This result shows that the *Awareness* factor is likely to have an influence on the adoption and utilisation of e-Government systems provided to the business sector. The proportion of neutrality or do not know responses in items AW1 and AW3, which were 29% and 27% respectively, shows some kind of shortage of awareness activities. Moreover, the result for item AW2 supports this assumption since the majority was keen to attend such awareness activities. Therefore, the *Awareness* factor needs to be carefully considered when implementing e-Government services and systems for the business sector.

AW part 2

This part aims to measure the influence of several advertising methods that can affect awareness which in turn affects willingness to accept and use e-Government services for business sector transactions. The respondents were asked about how various widespread advertising methods might affect their willingness to use e-Government services for their businesses' transactions. Figure 7.6 below shows the results of the second part of *Awareness* factor i.e. the influence of each of the proposed advertising methods on the participants' willingness to use e-Government.

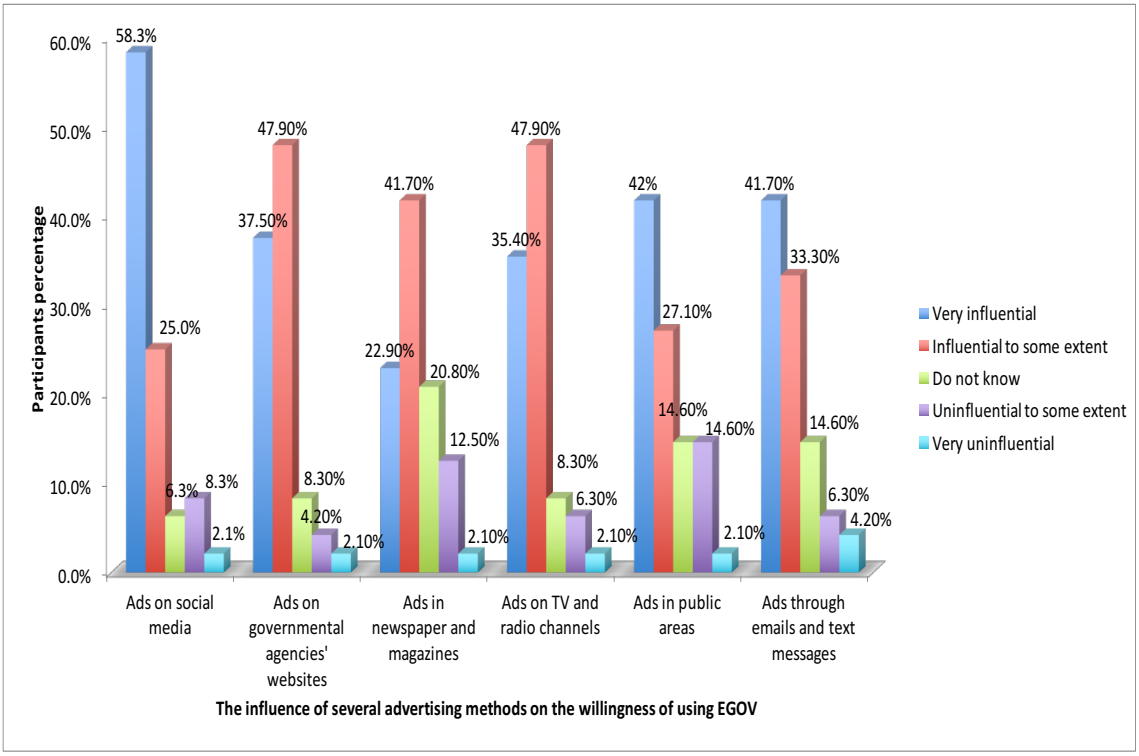


Figure 7.6: The results of AW part2 measurement items (business sector) (see appendix G for larger graph).

It can be seen from Figure 7.6 that almost 58% of the total participants reported that ads on social media significantly influence their willingness to use e-Government for their businesses' transactions. This means social media has a fundamental impact on the adoption and utilisation of users from the business sector. Government agencies could benefit from this method to increase business members' awareness. Albayari (2011) stated that social media have revolutionized the business sector in Saudi Arabia since they create efficient ways to communicate with customers. This means that many businesses have accounts on social media networks and also new businesses are expected to follow the same trend of using social media. The result of this study and the spread of social media in the business sector in Saudi Arabia provide the government with an excellent way of marketing e-Government services and increasing awareness about their benefits and potential. A further 42% of respondents reported that ads in public areas would increase their willingness to use e-Government services for their business. This method of advertising thus comes second after social media in terms of influencing acceptance and use. Advertising in public areas is one of the major traditional ways of advertising that is still influential. This kind of advertising includes billboards, banners and digital screens. Advertising through emails and text messages comes third in terms of influence, with a percentage of 41%. Awareness of e-Government potential and services can be increased through sending emails and texts to individuals and companies in the business sector.

The top advertising methods that were reported as influential to some extent were ads on government agencies' websites (47.9%), ads on TV and radio channels (47.9%) and ads in

newspaper and magazines (41.7%). Since the majority of the participating businesses are large companies, which are usually linked to certain government agencies electronically; and this may explain why respondents did not see many ads on the agencies' websites. Being linked electronically means being linked to the system directly and not through website interfaces. Moreover, most of the respondents were employees in the participating businesses and it is likely that the relatively long working hours in private sector reduces their chances of being exposed to media such as TV, radio and the press. It is also possible that they may well have learnt not to pay conscious attention to advertising in such media. Thus, they reported that these types of advertising only had an influence to some extent. This does not mean that such methods do not have a significant impact.

The composite score for this part of the *Awareness* factor is 1.97 indicating that advertising methods influence willingness to use e-Government systems to some extent. With regards to the outlier test, two cases were detected, and the recalculated composite score was 1.86 indicating the same result of advertising methods being influential to some extent.

The Functional Quality of Service/System (FQS) factor

The *Functional Quality of Service/System* (*FQS*) factor was also divided into two parts. The first part (*FQS* part 1) comprises 4 items, and a 5-point Likert scale ranging from "Strongly agree" to "Strongly disagree" is used in this part. The second part (*FQS* part2) comprises 6 items and a 5-point Likert scale ranging from "Very high importance" to "Very low importance" is used here. Table 7.5 presents all the items involved in this factor. The purpose and the results for each part are discussed in the following sections.

Table 7.5: The FQS factor measured from the business sector's perspective

Constructs	Item code	Measure
Functional Quality of Services/System	**FQS part1**	
	FQS1	I feel that the current EGOV services provided to business sector in Saudi Arabia are of high quality.
	FQS2	I think that using EGOV would contribute to increasing the quality of my company's commercial activities.
	FQS3	I think that the current Saudi postal services are fast and reliable to be used for correspondence with government when using EGOV.
	FQS4	I think the SADAD system is efficient and sufficient for use in e-Transactions fees payments.

	FQS part2	The degree of importance of providing several functional aspects that are related to the quality of services:
	FQS5	• The ability to track the status of my company's transactions online.
	FQS6	• The ability to appeal online in case of transaction rejection.
	FQS7	• The ability to view the history of all performed transactions that are related to my company.
	FQS8	• Communicating with me regarding the status of my company's transactions (e.g. by texts or emails).
	FQS9	• Providing customer care services dedicated to only serve customers from the business sector.
	FQS10	• The ability to rate the quality and performance of e-Services provided to business sector.

FQS part1

This part measures the influence of the quality of service on the adoption and utilisation of e-Government systems but from functional aspects concerning the e-Service itself. This part also measures how respondents feel about the general quality of the e-Services provided through e-Government, how using e-Government would enhance the quality of their businesses' activities, and what the influence of external functional aspects (such as post and payment services) on the quality of services provided by e-Government might be. The results of this part can be seen in Figure 7.7.

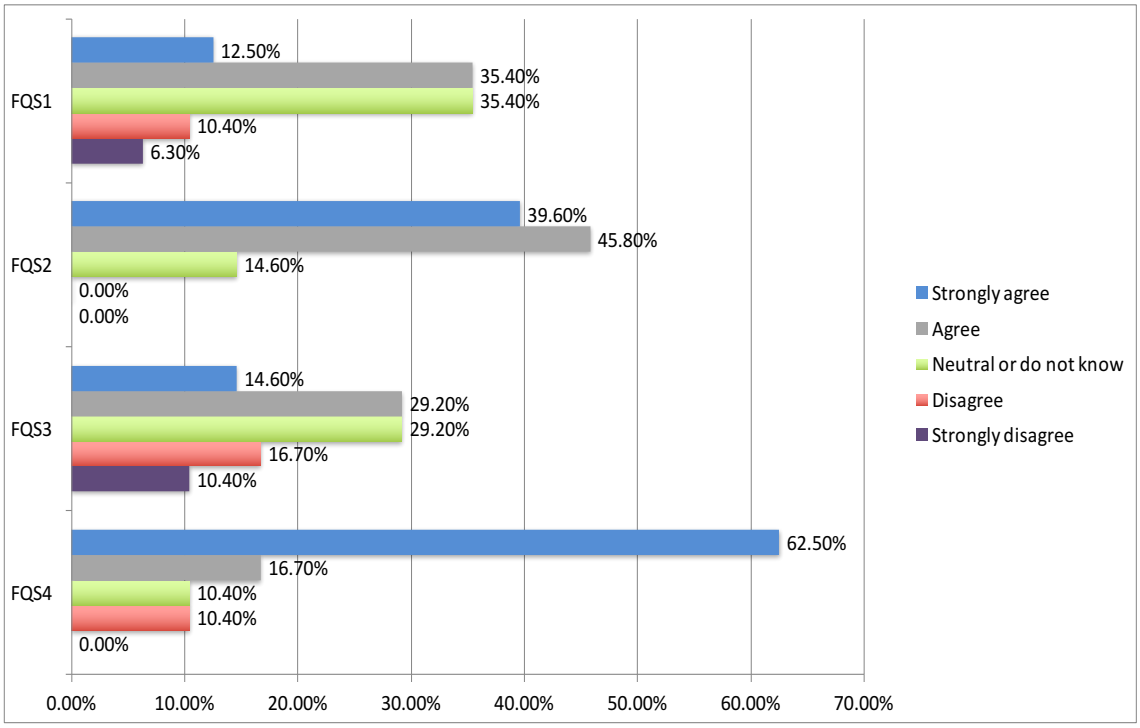


Figure 7.7: The results of FQS part1 measurement items (business sector)

In item FQS1, respondents were asked about the quality of e-Services provided to the business sector. Approximately 48% of the participants agreed that these e-Services are of high quality, 16% disagreed and a fairly high proportion of respondents (35%) were neutral or did not know. When investigating the neutral responses, it was found that over 70% of them were from employees. As stated earlier, the number of employees who deal with government transactions is small and the task of performing such transactions is usually distributed amongst them. Each employee is responsible for performing government transactions related to certain ministries; thus, it is likely that they do not have a general perception about e-Transactions provided by other ministries, also that they may not be able to make a general assessment as they might be dealing with different government agencies all with a different quality of e-Transactions. This also can justify the Likert score for this item (2.62) that indicates uncertainty in perception of the quality of e-Services.

With regards to item FQS2, the vast majority of the respondents (85%) agreed that using e-Government systems would enhance the quality of their companies' commercial activities and around 14% of them were neutral. Interestingly, none of the participants disagreed with this item. This indicates that there is a dominant perception about the benefits of using e-Government systems in terms of improving the quality and performance of commercial activities. It is likely that the very positive perception about the benefits of using e-Government that was found in the results for the *PB* factor is associated with the response to this item. Complying with government requirements, performing transactions faster and more efficiently, saving time and effort when using e-Government and minimizing the chances of regulation violation would clearly contribute to the quality of business activities. The Likert score for this item is 1.75 suggesting a strong belief in a better quality of business commercial activities resulting from using e-Government systems for business sector transactions.

One functional aspect that is very likely to influence the adoption and utilisation of e-Government is the postal service. The importance of such functional aspect was explained in Section (3.3.2.4.) in Chapter 3. In item FQS3, the respondents were asked about the efficiency and reliability of using the Saudi postal service when performing e-Government transactions. Figure 7.7 shows that 43% of the participants agreed it was effective and reliable, 27% of them disagreed and 29% were neutral or did not know. Although the majority showed a positive perception, the numbers disagreeing or neutral were also relatively high. Thus, the Likert score for this item is 2.79 indicating uncertainty about reliability of the Saudi postal service. These results were expected, as the Saudi postal services are still limited in Saudi Arabia. It is likely that many businesses do not benefit much from the Saudi postal service yet or they might have had bad experiences with using this service, hence, the result showing some general uncertainty

Another functional aspect related to the influence of the *FQS* factor is the payment methods that are used to pay for government transactions and service fees. In Saudi Arabia, the SADAD payment system is the most common method for government transactions payments (see Section 3.3.2.4. in Chapter 3 for more information about SADAD). In item FQS4, participants were asked about the efficiency and sufficiency of this payment system for e-Transactions. Over three quarters (79%) of the respondents agreed the SADAD payment system was good and sufficient for e-Transactions, 10% of them disagreed and the same percentage of 10% were neutral or did not know. Although there are not many options for online payments in Saudi Arabia, the total score for this item (1.68) reveals a high satisfaction level with the current payment system (SADAD).

The composite score for this part (*FQS* part1) is 2.21, indicating a likelihood that the *Functional Quality of Service/System* factor has an influence on the adoption and utilisation of users from the business sector in Saudi Arabia.

FQS part 2

This part measures the extent to which certain features are important to the respondents when using e-Government services for their businesses' e-Transactions. These features are related to the functional aspects that determine the quality level of e-Services provided by e-Government. Such functional aspects are listed in Table 7.5, and the results are shown in Figure 7.8 below:

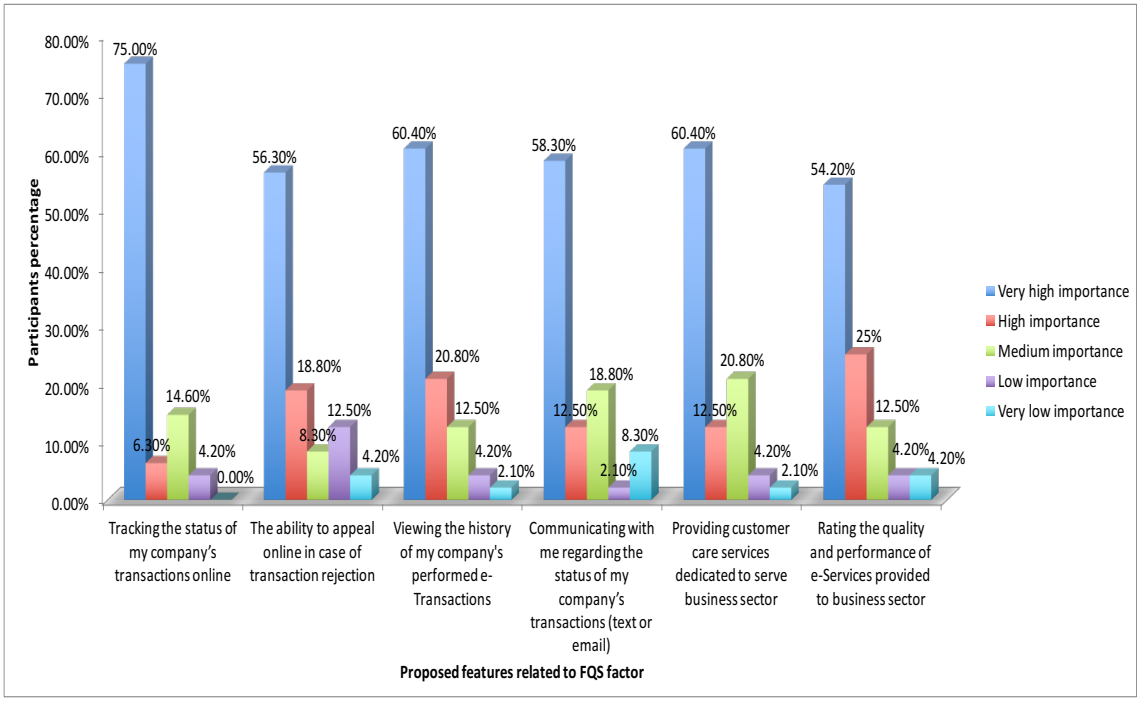


Figure 7.8: The results of FQS part2 measurement items (business sector) (see appendix G for larger graph).

Figure 7.8 in general shows a very high importance given to the proposed functional aspects. For example, three quarters of the respondents (75%) reported that being able to track the status of their e-Transactions online is very important to them. Moreover, around 60% of them reported that viewing the history of these transactions is also very important; and the same percentage gave a very high degree of importance to providing customer care services dedicated to business sector users. Between 54% and 58% of participants reported that the ability to evaluate e-Services, to make online appeals and to contact customers with regards to the status of their transactions were highly important functional aspects.

A medium degree of importance was given by 20% of the respondents to providing customer care services; and 18% of them considered communications by text and email to inform users from the business sector about the status of their performed transactions as of medium importance. Additionally, small percentages of the respondents considered some of the listed functional aspects as of low importance. For example, 16% of them gave low importance (from "Very low importance to Low importance") to online claims and appeals in case of transactions rejections; and about 10% considered communication with customers using text and email as of low importance.

Generally, all the proposed functional aspects that reflect the quality of the implemented e-Government services are very likely to influence the adoption and intention to use from the business sector perspective. The composite score of 1.74 demonstrates the importance of this factor.

The Previous Experience (PE) factor

This factor comprises three items that measure the influence of *Previous Experience* (*PE*) on the intention to adopt and use e-Government services provided to business sector (see Table 7.6). The *PE* factor was measured with Likert-type items with different scales. Thus, the median (*Md*) and Inter-Quartile Range (*IQR*) will be used in the descriptive analysis.

Table 7.6: The PE factor measured from the business sector's perspective

Constructs	Item code	Measure
Previous Experience	PE1	How do you rate your experience of using EGOV for your business transactions in general?
	PE2	How will previous experience of using EGOV for your business transactions affect your future usage?
	PE3	Will the previous experience of performing non-governmental online transactions affect your willingness to use EGOV for your business transactions?

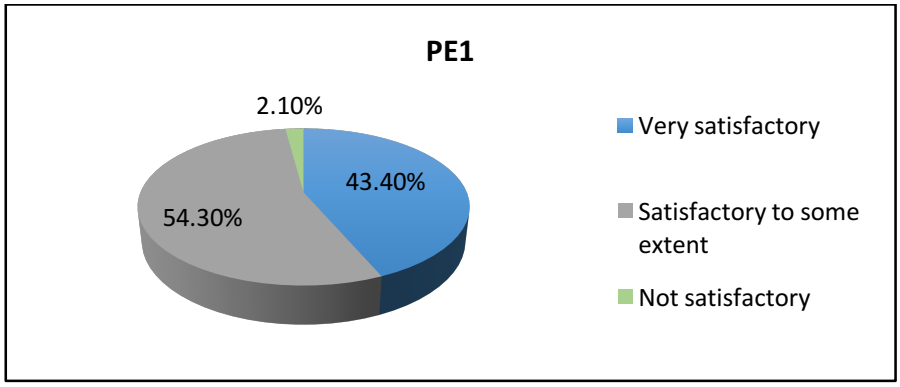


Figure 7.9: The result for item PE1 (business sector)

Item PE1 asked the participants to rate and evaluate their previous experience of using the e-Government services and transactions that are provided to the business sector. This item gives an indication of the impact of respondents' satisfaction with previous experience on their adoption and utilisation. Figure 7.9 above shows that 43% of the participants who have previously used e-Government services for their businesses were very satisfied with the experience, over half of them (54%) were satisfied to some extent and only 2% were not satisfied. These results show a relatively high level of satisfaction amongst the participants. It is suggested in this research that the level of satisfaction with a previous experience would have an impact on intention to adopt and use; therefore, this impact will be statistically assessed later in this chapter (in Section 7.4). The median value of this item is $Md = 2$ which indicates that the majority were satisfied to some extent. Therefore, data about the reasons that made over half of respondents not fully satisfied have also been collected and are discussed in the following paragraph.

Several reasons were proposed to the respondents to choose from and also they were given an option to state other (not proposed) reasons. Participants were able to choose more than one reason in this question in order to explore all possible reasons for dissatisfaction. All the participants who were not fully satisfied were asked to respond to this question; and Figure 7.10 presents the results:

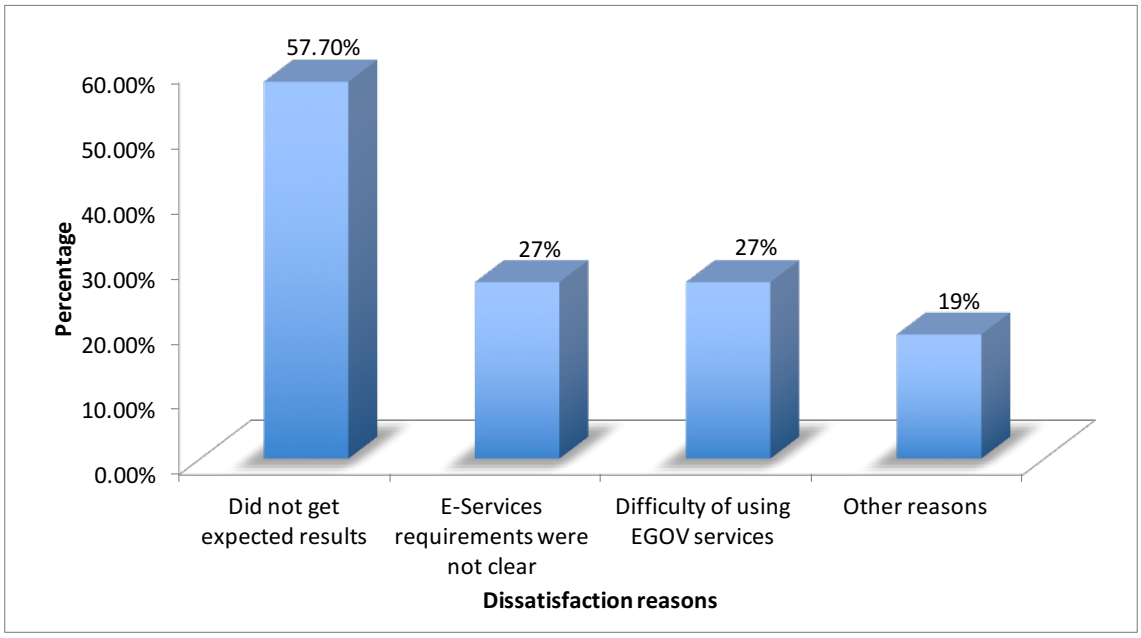


Figure 7.10: Dissatisfaction reasons of the e-Government use (business sector)

It is clear from Figure 7.10 that most of the participating users (57%) did not obtain what they had expected from using e-Government systems. It is likely that, for example, they needed to visit government agencies to complete their businesses' transactions even if using services online. Also they might not have been able to carry out online transactions through e-Government systems due to technical errors or their transactions might have taken a longer time to be processed than with traditional ways. E-Government systems need to be implemented to meet the users' needs, and that includes fast, successful, error free and effort free services.

Around 27% of the participating users reported that the requirements of e-Services that they had used were not clear. Such requirements include the procedures that businesses need to comply with, lists of documents that need to be provided or even the type of information that users need to provide to apply for a service. In order to achieve satisfactory adoption and usage level, all the requirements and procedures must be stated very clearly. Moreover, the same proportion of participants (27%) stated that difficulty with using e-Government services was one of the reasons that affected their satisfaction level. This includes difficulty in finding the intended e-Services on the agencies' websites, a lot of data and documents that are not important for the intended e-Services being required and the complexity of e-Transaction applications. It is very likely that the more e-Services are easy-to-use, the higher the customers' level of satisfaction.

Moreover, 19% of the respondents reported other reasons; the main ones being that e-Government often crashes, the slowness of the system when accessing e-Services and carrying out e-Transactions, the wrong data and information stored in the system or retrieved from different systems being shown, not getting proper help from government employees when using

e-Government services, lack of enough explanation on how to use e-Services, lack of workshops and training courses to increase the awareness of using e-Government systems and also the system functions not improving as they should. All these reasons as well as those listed would be likely to have a negative impact on adoption and utilisation of e-Government.

With regards to item PE2, the participants were asked about the influence of previous experience of using e-Government services and transactions on future use. Figure 7.11 below shows that over three quarters of respondents (76%) stated that their experience would encourage them to use, 8% of them stated that it would make them hesitant to use such e-Services again and around 15% stated that there would be no effect. The median value of this item is *Md* = 1 which indicates a high percentage of participants who were encouraged; this does not however mean that they were all completely satisfied with their previous use. It is likely that the need for e-Services and e-Transactions that can be performed online is the motivation for the future use.

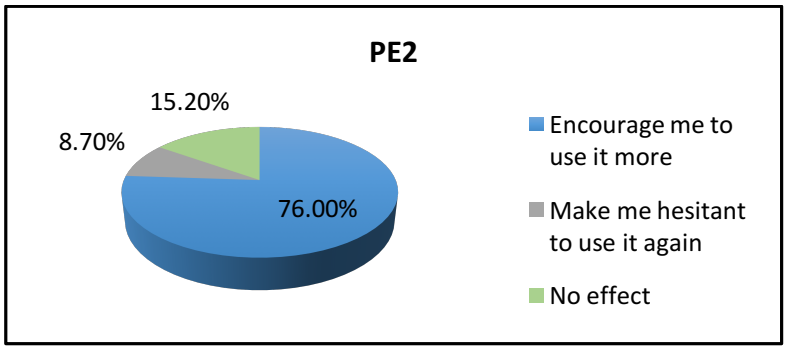


Figure 7.11: The result for item PE2 (business sector)

Item PE3 measures the influence of previous experience of using online non-government services that are related to business such as e-Banking and e-Commerce. It asked the participants whether this experience would affect their willingness to use online government services. The pie graph below (Figure 7.12) shows that over half of the respondents (57%) answered "Yes, positively", only 3% answered "Yes, negatively" and around 39% answered "No effect".

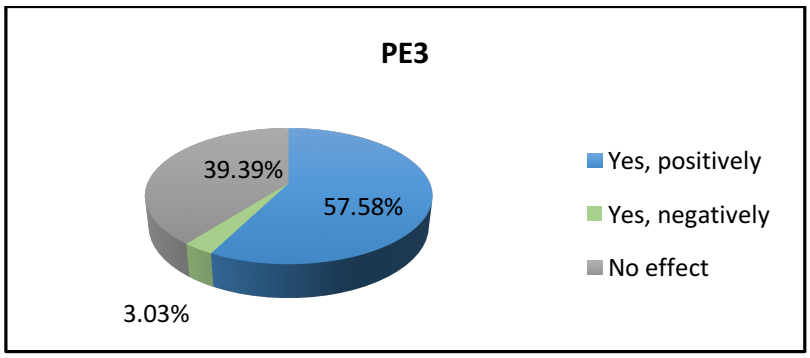


Figure 7.12: The result for item PE3 (business sector)

The results reveal that the median value of this item is *Md*= 1 indicating that using online non-government services is very likely to influence the willingness of using e-Government services and transactions. Although a relatively high proportion of the participants reported that previous experience would not influence them, governments should implement efficient, seamless and successful e-Services to minimize the possible negative influence of previous experience. Furthermore, respondents who chose the 'No effect' answer might have chosen this option because they need to use e-Government systems anyway, whether their experience of using other online services was positive or negative. The influence of the *PE* factor will be statistically assessed later in Section 7.4.

The Perceived Simplicity (PS) factor

The *Perceived Simplicity* (*PS*) factor was measured by two groups of items with a 5-point Likert scale. The first group (*PS* part1) involves three items and a Likert scale ranging from "Strongly agree" to "Strongly disagree" is used in this part. The second group (*PS* part2) also comprises three items and these are measured with a Likert scale ranging from "Very high importance" to "Very low importance". The purpose and results for each part will be explained in the following sections. Table 7.7 presents the items involved in both parts:

Table 7.7: The PS factor measured from the business sector's perspective

Constructs	Item code	Measure
Perceived	**PS part1**	
Simplicity	PS1	I believe that EGOV services provided for the business sector are easy to use.
	PS2	I feel that using EGOV for my company's transactions requires a lot of concentration and effort.
	PS3	If I found that using EGOV for my company's transactions was difficult and complex, I would hesitate to use it again.
	PS part2	The degree of importance providing several aspects and features that are related to simplicity:
	PS4	• Detailed steps on how to perform e-Services.
	PS5	• Text/image examples of the requirements.
	PS6	• Explanation on how e-Transactions will be processed.

PS part1

This part measures to what extent perceived simplicity influences participants' adoption and utilisation of e-Government systems. Figure 7.13 shows the results for the items included in this part.

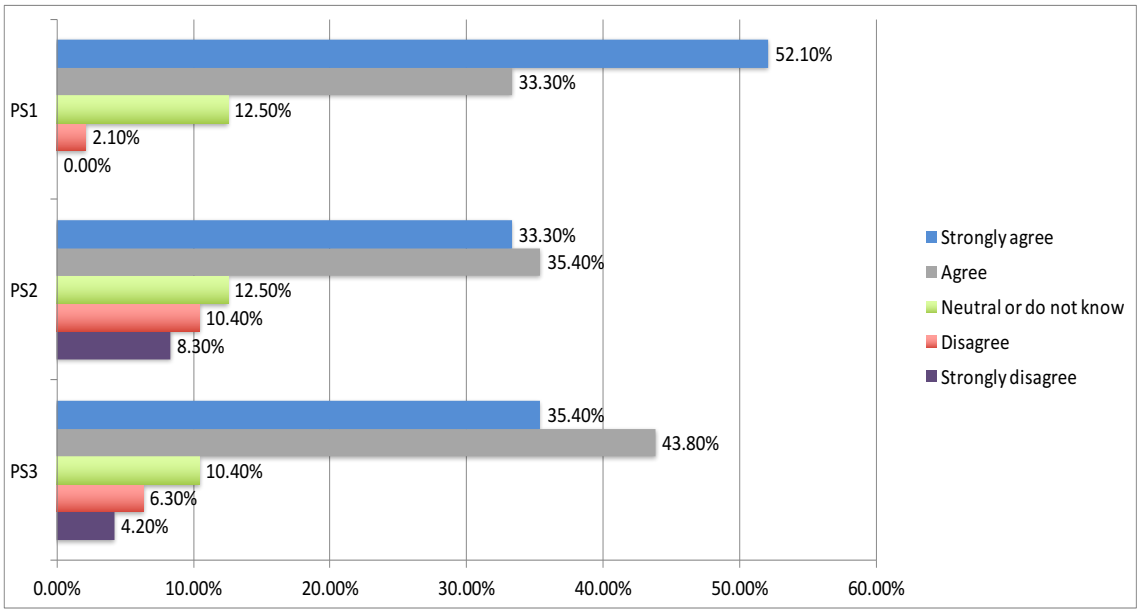


Figure 7.13: The results of PS part1 measurement items (business sector)

Item PS1 asked the respondents whether they believe that e-Government services that are provided for the business sector are easy to use. Figure 7.13 shows that the overwhelming majority (85%) agreed they were, 12% were neutral or did not know and only 2% disagreed with item PS1. The Likert score for this item is 1.65, indicating a positive perception about the simplicity of using e-Services and e-Transactions provided to the business sector through e-Government systems.

The respondents were asked in item PS2 to specify whether they believe that using e-Government services for their business requires a lot of concentration and effort. The results show that over half of the participants (68%) agreed, about 18% of them disagreed with this item and 12% of them were neutral or did not know. The Likert score is 2.25 and this shows the high level of concentration and effort that is perceived as necessary when using e-Government systems for business transactions. This is likely because of the lack of instant and tangible communications between customers and e-Services providers when using online services. In traditional transactions, customers can instantly interact with the government employees who serve or conduct government transactions and can inform customers if there are any mistakes or incomplete information and documents that may result in the transaction being rejected. In the online environment, such communication is limited especially when there is no effective online communication method such as online chat with representatives. This may well be the explanation why participants thought more concentration was needed when carrying out e-Transactions as these may be rejected due to lack of or mistakes in the information provided and documents.

With regards to the results for item PS3, Figure 7.13 shows that 79% of the respondents said they would hesitate to use e-Government services for their business if they found them difficult and complex. On the other hand, 10% would still use such e-Services, even if they were difficult and complex; and approximately 10% gave 'neutral or do not know' answers. The Likert score for this item is 2, indicating that the difficulty and complexity of using e-Government services would negatively influence the willingness of users from the business sector to adopt and use such e-Services again. Although the need and demand for online government services is high, especially for the business sector; the difficulty in using them would be likely to decrease users' adoption and utilisation levels. Different users' abilities and skills need to be taken into account when implementing and providing e-Services.

The composite score for this part (*PS* part1) is 1.96, revealing an overall agreement on the influence of this factor on adoption and usage level. Therefore, it is likely that the more e-Government systems are easy and simple to use, the higher the level of customers' adoption and utilisation achieved.

PS part2

This part asked the respondents to indicate the degree of importance of providing certain information and features, which influence the simplicity of use, when implementing e-Government systems. Measuring the importance of such characteristics gives an indication of whether simplicity would influence the adoption and utilisation of e-Services. The results of *PS* part2 can be seen in Figure 7.14:

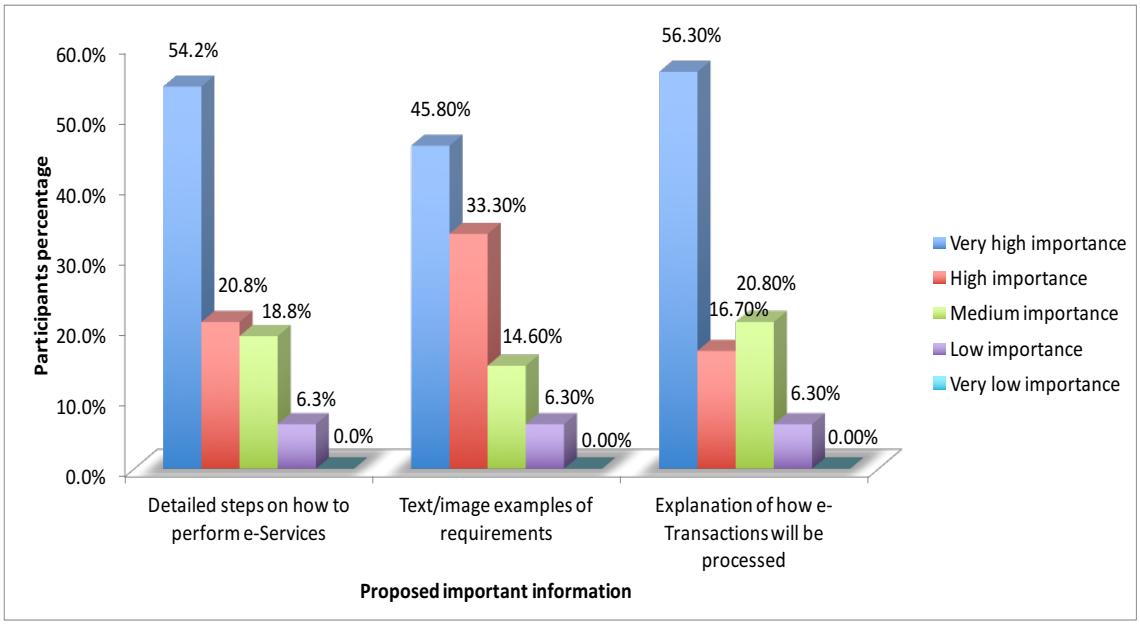


Figure 7.14: The results of PS part2 measurement items (business sector) (see appendix G for larger graph).

It is clear from Figure 7.14 that the majority of respondents believe that providing such information and features is of high importance; and providing detailed steps on how to perform e-Services was very important to three quarters of them (75%). About 79% of the participants allocate the same degree of importance to providing illustrative texts and images of the required information and documents; and 63% believe that providing explanations of how e-Transactions are processed is a very important aspect. Remarkably, the graph shows that a very low proportion of the participants (6%) gave this aspect a low degree of importance. Furthermore, none of the participants believe that such information and features have a very low degree of importance. It is very likely that providing information and features that increase simplicity influences the adoption and utilisation of e-Government services; this is reflected in the composite score for this part which is 1.78. It is crucial to provide helpful information and features that make the use of e-Services easier and simpler, especially in government services. This is because users differ in their skills and knowledge when using online services; and those with a low level of knowledge and skills may be dissuaded from using them.

The Technical Quality of Service/System (TQS) factor

This factor was measured with five items and divided into two parts. The first part (*TQS* part1) comprises two items and uses a 5-points Likert scale ranging from "Strongly agree" to "Strongly disagree". The second part (*TQS* part2) comprises three items and a 5-point Likert scale ranging from "Very high importance" to "Very low importance" is used in this part. All five items are presented in Table 7.8 below:

Table 7.8: The TQS factor measured from the business sector's perspective

Constructs	Item code	Measure
Technical Quality of Services\System	**TQS part1**	
	TQS1	The existence of technical errors while using EGOV for my business's transactions would reduce my willingness to use it.
	TQS2	The interface design and layout of EGOV would influence my willingness to use EGOV for my business's transactions.
	TQS part2	The degree of importance of providing several technical aspects that are related to the quality of services:
	TQS3	• The expected time to complete your business e-Transaction
	TQS4	• The last updated time of the e-Services websites
	TQS5	• The last updated time of the procedures and requirements

TQS part1

This part concerns users' perceptions about the influence of two technical aspects that reflect the quality of the provided e-Services. Those two aspects are the influence of technical errors and the influence of the design and layout of e-Services user interfaces. Figure 7.15 shows the results for this part:

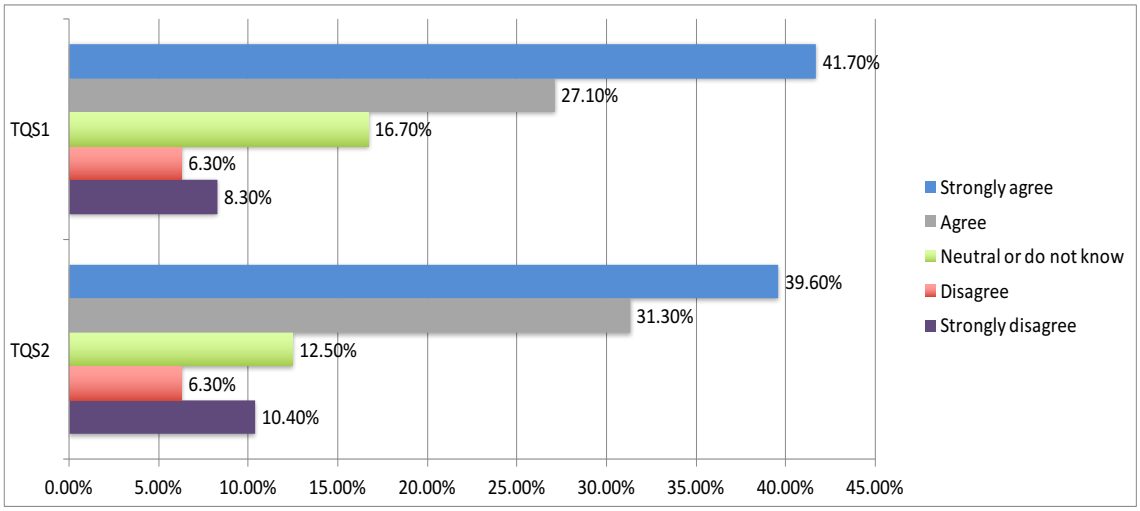


Figure 7.15: The results of TQS part1 measurement items (business sector)

Figure 7.15 shows that 68% of the respondents agree that technical errors such as links not working and server errors would negatively affect their willingness to use e-Government services (item TQS1). Around 16% of them were neutral or did not know and 14% disagreed. The Likert score is 2.12, indicating an overall agreement on the negative influence of the technical errors on the users' adoption and usage. This high agreement is expected since the technical aspects of e-Government systems are crucial in terms of quality of service, especially when they are visible to users. Moreover, the existence of technical errors that appear to the users while using government e-Services would be likely to influence other aspects such as trust, accessibility and simplicity.

Item TQS2 asks the respondents to determine the influence of the interface design and layout of e-Government websites. Figure 7.15 shows that the majority (70%) of participants agreed that this technical aspect would influence their willingness to use e-Services; whilst 16% disagreed and 12% were neutral or did not know. The Likert score for this item is 2.16 and indicates an overall agreement about the influence of the design and layout of e-Government websites on the users' willingness to use. E-Services interfaces are the means of interaction between government agencies and users; and it is very likely that they can increase adoption and usage levels if well-implemented and based on users' requirements. Their design and layout can also decrease adoption and usage levels, if they do not meet users' needs and expectations.

The composite score for this part is 2.40 and this means that there is a high level of agreement on the influence of technical quality of service on adoption and utilisation by users from the business sector. Technical aspects are very important in terms of how the quality of a service/system is perceived; and thus, eliminating technical errors or at least minimizing the visible ones that users can see is fundamental. A high technical quality, including the design, structure and layout of e-Government portals, is also crucial to achieve a high level of adoption and utilisation (Ziemba et al., 2014).

TQS part2

The second part of this factor concerns measuring the degree of importance of providing important informational features related to the technical side of e-Services. The proposed informational features include the expected time to complete e-Transactions, the last updated time of the e-Services' websites and the last updated time of the procedures and requirements. Figure 7.16 presents the results for this part:

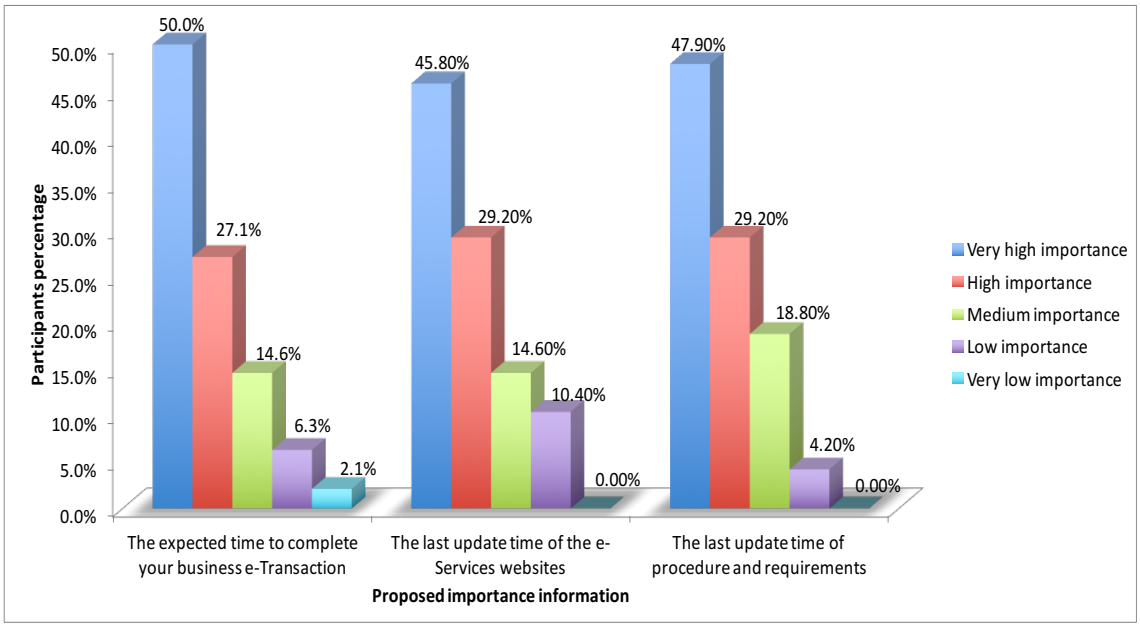


Figure 7.16: The results of TQS part2 measurement items (business sector) (see appendix G for larger graph).

As shown in Figure 7.16, the majority of respondents reported that providing the proposed informational features when using e-Services for their businesses is very important to them. More than three quarters of the participants (77%) agreed on that providing the expected time to complete their businesses' e-Transactions is of high importance; and providing the last updated time of the procedures and requirements for conducting e-Transactions was also very important to the same proportion of participants (77%). Showing the last updated time of the e-Services websites was also reported by 75% of the participants as very important information. These results indicate that technical quality is highly important to users in the business sector.

Small proportions of the participants generally gave a low degree of importance to the proposed informational features. Remarkably, Figure 7.16 shows that none of the respondents chose "Very low importance" for providing the last updated time of the e-Services websites and e-Services procedures and requirements. The expected time for e-Transactions completion was of very low importance for only 2% of the participants.

The composite score for this part is 1.84, which indicates that the proposed informational features are highly important to users from the business sector. The overall results for the technical quality of service factor (parts 1 and 2) indicate that it is likely that this factor influences adoption and utilisation by users from the business sector. Therefore, paying more attention to technical aspects that appear directly to the users, including reducing technical errors, enhancing interface design and providing informational features that reflect high technical quality of service would be likely increase the adoption and usage levels of e-Government services provided to the business sector.

The Accessibility (ACC) factor

Four items were involved in measuring the influence of this factor which comprises two parts. The first part (*ACC* part1) includes one Likert-type item and an agreement Likert scale was used. The second part (*ACC* part2) includes three items and a Likert scale for the degree of importance was used. The items are listed in Table 7.9 below:

Table 7.9: The ACC factor measured from the business sector's perspective

Constructs	Item code	Measure
Accessibility	**ACC part1**	
	ACC1	I think that the existence of authorized offices to help users from the business sector with EGOV use and correspondence is a good idea.
	ACC part2	The degree of importance of providing several aspects and features that are related to accessibility:
	ACC2	• Full access to my company's data with full control of its presence in EGOV systems
	ACC3	• The ability to access EGOV to perform my business's transactions at any time 24/7.
	ACC4	• The existence of official mobile apps that are dedicated to the business sector to interact with EGOV.

ACC part1

Item ACC1 asks participants whether the existence of authorized offices that help users from the business sector with the use of e-Government services is a good idea. These authorized offices are meant to be official agencies associated with government organisations to provide help to users with accessing e-Government systems, accessing and conducting e-Transactions and corresponding with government organisations. These offices are considered to be intermediaries between users who need help accessing and using e-Government services and the government organisations. The result for this item is shown in Figure 7.17 below:

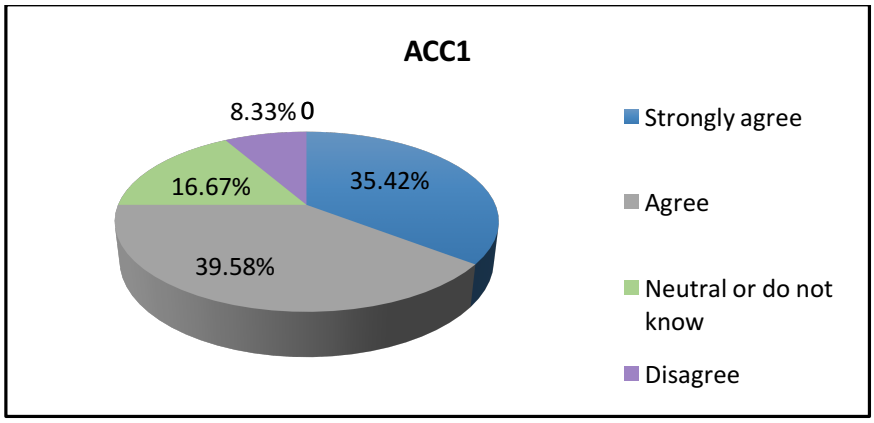


Figure 7.17: The result of ACC part1 measurement item (business sector)

Figure 7.17 shows that three quarters of the participants (75%) agreed with the provision of authorized offices, with a small number (8%) disagreeing and about 16% neutral. It is clear that the majority support the existence of such authorized offices; and this is likely because e-Government is still in its early stages of development in Saudi Arabia as well as the communications infrastructure and the postal service. Thus, it is important to introduce different access methods, including authorized agencies, which can facilitate the access and use of e-Services. The median value of this item is *Md*= 2 indicating a general agreement with the item statement. This shows that allowing for access to e-Government systems through a third party (authorized offices) is a good idea. Weeakkody et al. (2013) conducted a study in Madinah city in Saudi Arabia to investigate the role of intermediaries in e-Government adoption and use. The study revealed that intermediaries are a very useful means of improving and facilitating e-Government adoption and diffusion. This suggests that the Saudi government should exploit the concept of using intermediaries in order to enhance and increase the adoption of e-Government since this can positively influence the users' trust, and higher adoption and usage could be thus achieved.

ACC part 2

For the second part of the *Accessibility* factor measurement, the participants were asked to indicate the degree of importance of several features that relate to accessibility. The results for this part are presented in Figure 7.18 below:

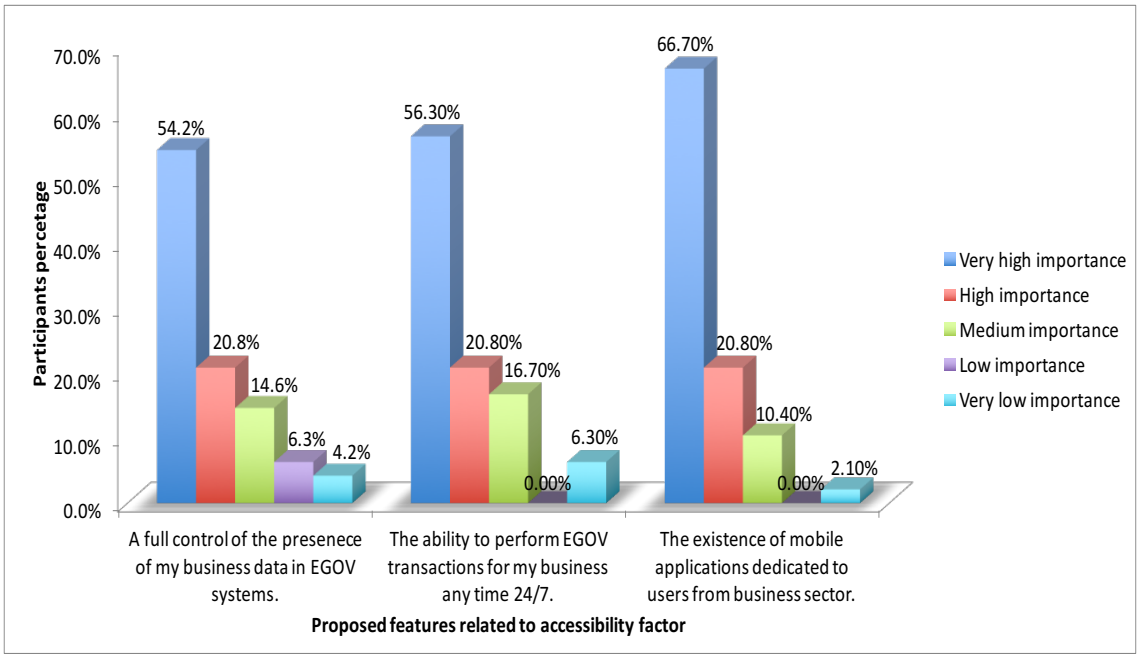


Figure 7.18: The results of ACC part2 measurement items (business sector) (see appendix G for larger graph).

It can be seen from Figure 7.18 that having full access to and control of the presence of their data in e-Government systems is highly important to three quarters (75%) of the participants from the business sector; while it is of low importance to only 10% of the total respondents. The total score for this item (ACC2) is 1.85, indicating that users from the business sector prefer to have full access to the data stored in e-Government systems about their businesses; and also to have full control over it so that they can delete it or keep it stored. Moreover, the results also show that business users' ability to access e-Government services at any time (24 hours and 7 days) was of high importance to approximately 77% of the respondents. Only 6% of the participants considered this feature as having low importance. The total score is 1.79, indicating that the ability to access and use e-Services at any time is a very important feature to users from the business sector. Since most of the participating businesses (around 70%) were large companies, it is likely that they have large number of government transactions that they need to conduct and the participants, just over 80% of whom are employees, prefer to have the flexibility to do this at any time, even out of working hours.

Another accessibility method that may influence the adoption and utilisation of e-Government services is the provision of e-Services through mobile applications. This was highly important

to the vast majority of the participants (87%); only 10% gave it medium importance, and 2% very low importance. The total score of 1.5 indicates that being able to access e-Government systems from anywhere is very important to users from the business sector and it is very likely that providing mobile applications for this purpose will increase the level of adoption and utilisation.

The composite score for this part is 1.7, indicating a very high degree of importance given to the introduction and provision the accessibility features proposed when implementing e-Services to the business sector. With regards to the outlier detection test, only one case was detected and the composite score was 1.6 after omitting it, indicating the same interpretation of this factor having "Very high importance".

The Perceived Trust (PT) factor

The *Perceived Trust* factor was measured with nine items using a 5-point Likert scale ranging from "Strongly agree" to "Strongly disagree". The *PT* factor concerns three crucial aspects, namely: trust, security and privacy; thus, all these aspects were measured with different items. Table 7.10 presents all the items that were developed to measure the influence of this factor and Figure 7.19 shows the results:

Table 7.10: The PT factor measured from the business sector's perspective

Constructs	Item code	Measure
Perceived Trust	PT1	I feel that the Internet is not safe to be used to conduct government e-Transactions for my business.
	PT2	I feel that EGOV is a safe environment that enables me to perform e-Transactions for my business securely.
	PT3	I would hesitate to provide sensitive information about my business through EGOV (e.g. profits, expenses and investment information).
	PT4	I feel that my company's data that is stored in EGOV systems can be misused.
	PT5	I feel that dealing with the government electronically online could cause invasion of my business privacy.
	PT6	I feel that my company's data that is stored in EGOV systems can be used by other parties without my permission.
	PT7	I prefer keeping hard copies of my company's transactions to saving them electronically.
	PT8	I think that government agencies in Saudi Arabia can be trusted to provide EGOV services to the business sector in a secure manner.
	PT9	Classifying e-Services based on how much information the business entity would provide to EGOV is a good idea.

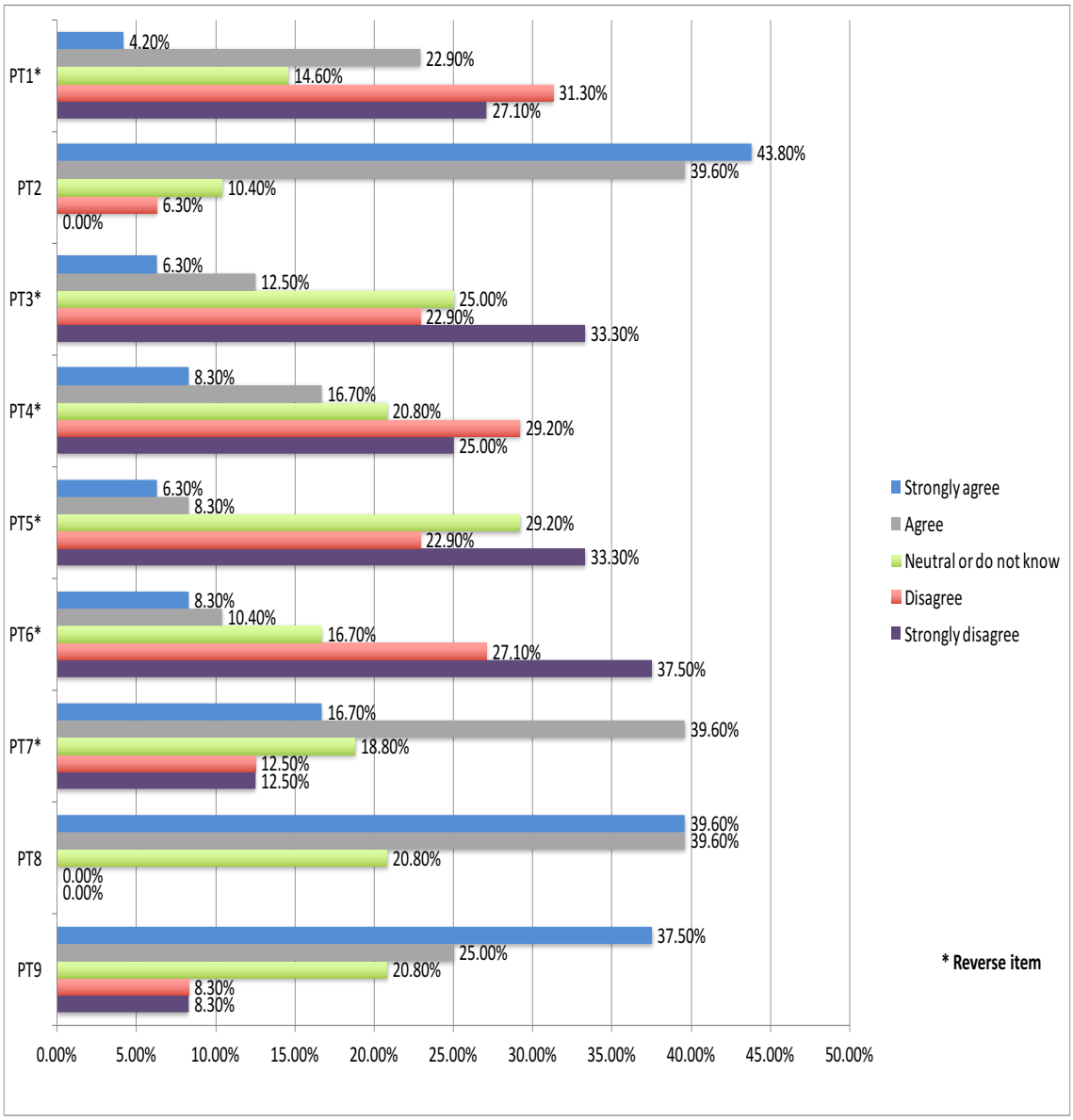


Figure 7.19: The results of PT measurement items (business sector) (see appendix G for larger graph).

Item PT1 asked respondents to indicate their feelings about whether the Internet is a safe way to conduct e-Transactions for their businesses. Figure 7.19 shows that 58% of the participants agreed that the Internet is safe for such a purpose, while 27% disagreed. This indicates a fairly good perception about the security of using online means, although the proportion of respondents who disagreed was somewhat high. Thus, the result was investigated further and it was found that the education level of 54% of the respondents who disagreed was secondary school or less. It is likely that education level has an impact on perception about security when using online government services; as possibly this is linked to lack of knowledge about Internet security and safety technology; or because those respondents have not used the Internet for proposes which have demonstrated that the Internet can be a safe environment. The Likert score for this item is 3.54, indicating that the majority believe that the Internet is a safe means for conducting e-Transactions.

Item PT2 asks participants to indicate whether they feel that e-Government is a safe and secure environment in which to carry out e-Transactions for their business. The results show that the overwhelming majority (83%) agree that it is, around 10% were neutral or do not know and only 6% disagreed. This indicates a high perception of the security of using e-Government for businesses' government transactions. Moreover, the Likert score for this item is 1.79, indicating a strong agreement about e-Government being a safe environment. It is likely that users believe that the government would normally provide safe systems and therefore, their perception of the security of such systems was very high.

Item PT3 asks participants whether they would hesitate to provide sensitive information related to their business through e-Government systems. They were given some examples of sensitive information, i.e. profits, expenses and investment information; which is the kind of information considered as important data that not all businesses may want to reveal. Figure 7.19 shows that 56% of the respondents said they would not hesitate to provide sensitive information through e-Government systems whereas 18% felt that they would. These percentages indicate a relatively positive perception of privacy, since over half the respondents would provide this kind of data. Furthermore, a relatively high proportion of participants (25%) said "Do not know or neutral". These responses were therefore investigated and it was found that three quarters of them (75%) were employees. It is likely that such information is not considered as sensitive data by employees and they would willingly provide such information if it was required during the use of e-Government. Moreover, sensitive information such as profits, expenses and investment information might not be required in the e-Transactions they conduct in their work; therefore, they were uncertain as to whether they would provide this kind of data or not. The Likert score for this item is 3.64, indicating that the majority would not hesitate to provide sensitive data while using e-Government.

As can be seen from Figure 7.19, over half the respondents (54%) disagree with item PT4 that states: "I feel that my company's data that is stored in e-Government systems can be misused"; approximately 24% of the participants agree, while 20% were neutral or do not know. The Likert score is 3.45, indicating an overall disagreement with the statement which means a high trust perception amongst the participants from the business sector when using e-Government. Although the results for this item reveal relatively positive trust and privacy perceptions, the proportion of respondents who agree about the possible misuse of their data was not low. This is likely because some respondents might have faced issues regarding data misuse when using traditional ways of dealing with government agencies, and they still believe that their data can be misused even when using electronic and online means.

In item PT5 participants were asked whether they believe that using e-Government could cause invasion of their business privacy. Over half of the respondents (56%) disagreed while only 14% agreed; and 29% said "Do not know or neutral". The latter was investigated further and it was found that half of them (50%) also ticked "Do not know" to the question asking them about their company's profits. Thus, it is likely that users who were uncertain about whether e-Government could invade their business privacy or not are not privy to sensitive company data. The Likert score for this item is 3.68, indicating a positive perception of privacy when using e-Government services.

Respondents were asked in item PT6 about the possibility of their business data being used by other parties without their permission when using e-Government systems. 'Other parties' refer to other government organisations, other companies or other unrelated government employees. The results show that 64% disagree, around 16% are neutral or do not know and 18% agree. This indicates a high level of perceived trust by respondents, since the majority felt that their businesses' privacy would be maintained. Although the integration and electronic cooperation between different government agencies in Saudi Arabia is still limited, users from the business sector believed that their business data would not be shared or disclosed without their permission. This is clear from the overall disagreement with this item as the total score is 3.75.

In relation to item PT7, the respondents were asked to indicate whether they prefer to keep hard copies of their companies' transactions rather than saving them electronically. This item measured perceived trust in using electronic means when conducting government transactions. Figure 7.19 shows that more than half the respondents (56%) prefer hard copies, whereas a quarter of them (25%) do not. The high percentage of users who prefer to keep hard copies can be interpreted in several ways, for example, the fear of losing electronic data may mean that some users do not trust online or electronic environments especially when important documents are involved. The other possible reason is that users may have had a previous negative experience of losing data or documents. When investigating the results, it was found that approximately 69% of the participants who own the participating businesses prefer to keep hard copies of their government transactions. Thus, it is possible that the owners' perceived trust is lower than that of employees in terms of keeping hard copies of their businesses' transactions when using e-Government.

In item PT8, respondents were asked about their perceived trust in the ability of government agencies in Saudi Arabia to provide e-Services to the business sector in a secure manner. Figure 7.19 shows that the vast majority of the respondents (79%) agree that they can. The Likert score for this item is 1.81, indicating that users from the business sector trust government agencies to provide secure e-Services. Remarkably, none of the participants disagreed with the statement

and this reflects a high level of trust in the government agencies' ability to implement secure e-Services.

With regards to the respondents' views about classifying e-Services based on how much information they would provide about their businesses when using e-Government (item PT9), the results show that 62% agree that this is a good idea; around 20% are neutral and 16% disagree. This item measures the importance of privacy to the participants, since when they have the flexibility of providing or not providing certain information, they have more control over their data privacy. With the proposed option, users could use some e-Services and provide less information and provide more for others. The Likert score for this item is 2.25, indicating an overall agreement on the usefulness of this proposed option for controlling privacy of information.

The composite score of the *PT* factor is 2.34 and this gives an indication that *Perceived Trust* is likely to influence the adoption and utilisation of e-Government from the perspective of users from the business sector. Moreover, the strong perceptions of trust, security and privacy shown in almost all items reflect the importance and the influence of trust for both business owners and employees in the business sector.

The Regulations and Policies (RP) factor

The influence of the *RP* factor was measured by four items. In these items, the participants are asked about the importance of applying and implementing regulations and policies related to the use of e-Government. Exploring the importance of such regulations and policies gives an indication of the influence of this factor on users' adoption and utilisation level. Table 7.11 presents the items included in measuring the influence of this factor and Figure 7.20 shows the results:

Table 7.11: The RP factor measured from the business sector's perspective

Constructs	Item code	Measure
Regulations & Policies		The degree of importance of providing and implementing regulations and policies related to the use of EGOV:
	RP1	• Detailed e-Version of the regulatory procedures and requirements that business entities need to comply with.
	RP2	• Information security policies.
	RP3	• Information privacy policies.
	RP4	• Regulations and laws related to reserving users' and agencies' rights.

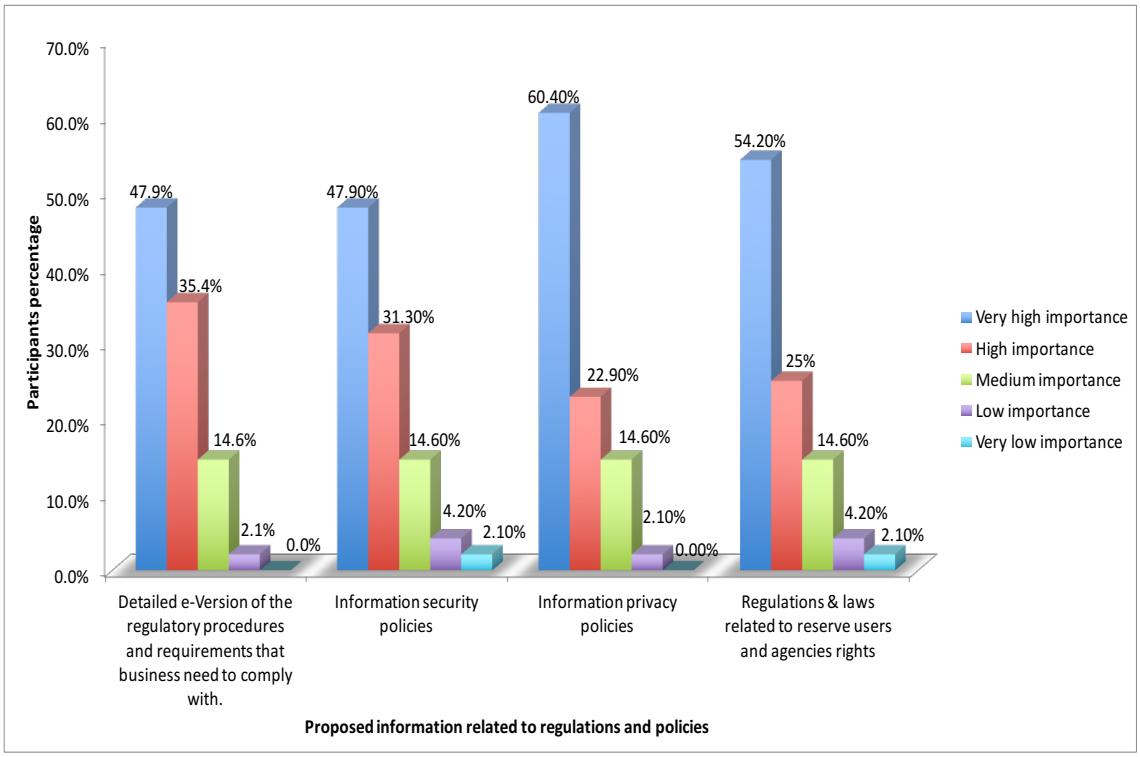


Figure 7.20: The results of RP measurement items (business sector) (see appendix G for larger graph).

It is clear from Figure 7.20 that all the proposed regulations and policies were of high importance to the majority of the respondents. The graph shows that around 83% report that providing an e-Version of the regulatory procedures and requirements that their businesses need to comply with is highly important to them. Such procedures and requirements are different according to the business activities, and they are usually changed regularly by government. Providing a detailed e-Version of these procedures and requirements is very likely to increase users' adoption and utilisation in the business sector.

Providing information security policies is also highly important to over 79% of the participants. Such policies involve security procedures, such as those for storing users' data and security guidelines that the agencies follow when providing e-Services. Even if agencies implement a high standard of policy regarding information security, users need to see and experience this for themselves. Approximately 83% of the respondents gave a high degree of importance to the existence of information privacy policies. The results for the *Perceived Trust* factor in the previous section also show that privacy is important to users and is an influential aspect of adoption and use. Therefore, providing information privacy policies when implementing e-Government services and making them visible are fundamental. Such policies include data protection policies and privacy maintaining procedures such as requiring users' permission when sharing their data.

Regulations and laws related to reserving users' and agencies' rights when using e-Government services is of high importance to more than three quarters of the respondents (79%). Such regulations and laws protect users' rights when using online e-Services for their businesses; for example, users need to know what they should do when conflicts happen with e-Service providers. These regulations and laws also, reserve the rights of government agencies when providing e-Services to customers; including the reasons that give the agencies the right to refuse to process an e-Transaction.

Remarkably, very few participants gave low importance to these items. Only 2% of the respondents believe that having an e-Version of the regulatory procedures and requirements and information privacy policies are not important; and only around 6% gave a low importance to providing information security policies and legislation to reserve rights.

The composite score is 1.71 which indicates an overall agreement about the high importance of the proposed regulations and policies. The results reveal that applying strict, clear and detailed regulations and policies when implementing e-Government systems is very important to the users from the business sector. This is likely because users from the business sector are cautious and careful about their businesses' transactions and they do not want their business activities and performance to be negatively affected due to lack of knowledge or understanding of regulations and policies, especially if they are a large business (around 70% of the participating businesses are large). Therefore, it is crucial to carefully consider this factor when implementing e-Services for the business sector. Although implementing and applying these regulations and policies is important, as the results reveal, making them visible where users can see and experience them is also crucial. It is often the case that such legislation is lengthy and so users may not be interested in reading them; nevertheless, they could be summarized on the relevant government websites with the important points presented clearly.

The Intention to Use e-Government (ITU)

The *Intention to Use* E-Government (*ITU*) is a dependent variable proposed in the research model (EGAUM). In this chapter it concerns business users' intention to use e-Government systems for e-Services and e-Transactions, and it was measured with two items. The correlation between this dependent variable and all the independent variables (factors) that have been analysed previously in this section will be measured in order to explore and investigate the influence of each factor on the users' intention to use. The items were measured using a 5-point Likert scale ranging from "Strongly agree" to "Strongly disagree". These items are shown in Table 7.12 and the results appear in Figure 7.21:

Table 7.12: ITU measured from the business sector's perspective

Constructs	Item code	Measure
Intention to Use	IT1	I intend to use EGOV services and transactions for all my company's transactions.
	IT2	I prefer to connect my business electronically with the government agencies through an e-Government system.

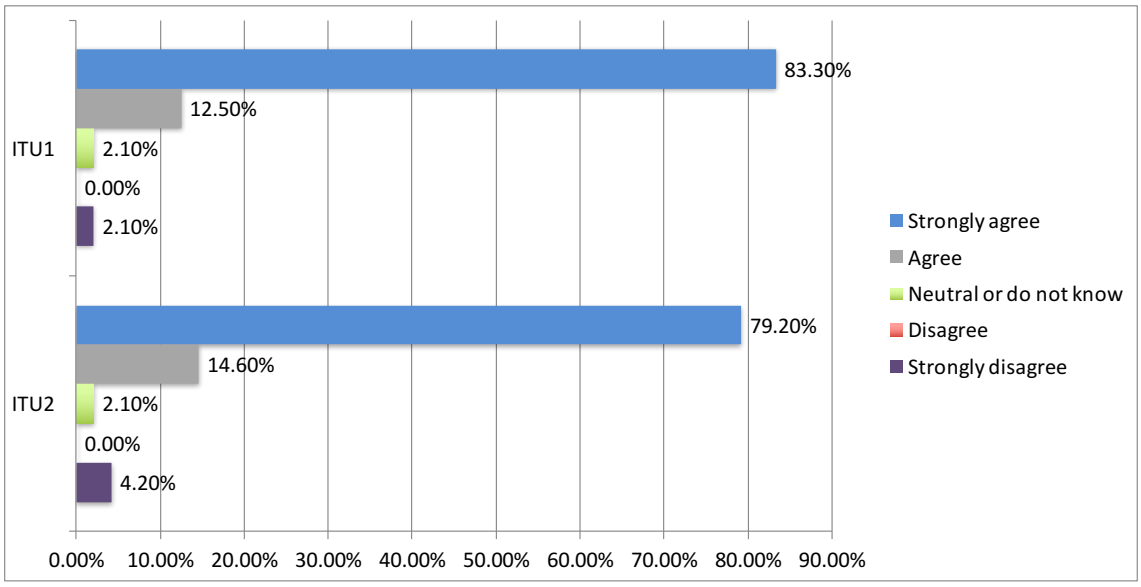


Figure 7.21: The results of ITU measurement items (business sector)

In item ITU1 participants are asked to indicate whether they intend to use e-Government systems for all their businesses' transactions. Figure 7.21 shows that the overwhelming majority of the respondents (95%) intend to use such e-Services for their businesses. This reflects the real necessity of implementing successful e-Government services for business sector users. Only 2% of the participants were neutral or did not know whether they would use such e-Services or not; also a very low percentage of respondents (2%) did not intend to use e-Government for all their businesses' transactions. The Likert score of 1.25 indicates a very high willingness and intention to use.

Since there are several government systems that have been introduced in recent years in Saudi Arabia that provide data and e-Services to the business sector, the participants were asked about being constantly connected to these systems. These systems are useful for both government agencies and businesses; for example, hotels and car rental companies can benefit from being connected to a government system or database that can identify offenders and fraudsters. This will prevent these companies from dealing with malicious persons, and thus save these companies from possible theft and fraud (benefit for business entity) and also would minimize the crime rate (benefit for government). Moreover, being connected to e-Government systems would facilitate and speed up conducting government transactions, including those related to

commercial activities or to the company's employees. For example, large companies need to perform many government transactions that are related to their foreign employees with regards to their passports, visas and work permissions. Thus, being constantly connected with the related government systems would facilitate and speed up conducting such transactions. In this regard, respondents were asked about their businesses being constantly connected to government electronic systems. The vast majority (93%) of the participants show a high degree of willingness for such a connection; only 4% are unwilling and 2% are neutral. The Likert score of 1.30 also indicates a very high intention to use e-Government systems, since such electronic connections with government agencies are considered to be a form of e-Government usage.

The composite score for this variable is 1.30, and this means that the intention of users from business sector to use e-Government systems for their businesses is very high; and that there is a strong desire for successful e-Government systems. When investigating the results, one outlier case was detected, but it had no significant impact on the final composite value.

The Perceived e-Readiness of e-Government

The *Perceived e-Readiness* of e-Government is another dependent variable that was proposed in the EGAUM. It concerns users' perceptions about the e-Readiness of the Saudi e-Government and it was measured with two items. Table 7.13 presents those items and Figure 7.22 shows the results:

Table 7.13: PER measured from the business sector's perspective

Constructs	Item code	Measure
Perceived E-Readiness of e-Government	PER1	I think that the current Saudi e-Government infrastructure is inefficient in providing successful e-Services for the business sector.
	PER2	I feel that government agencies in Saudi Arabia are not able to successfully implement EGOV for the business sector as required.

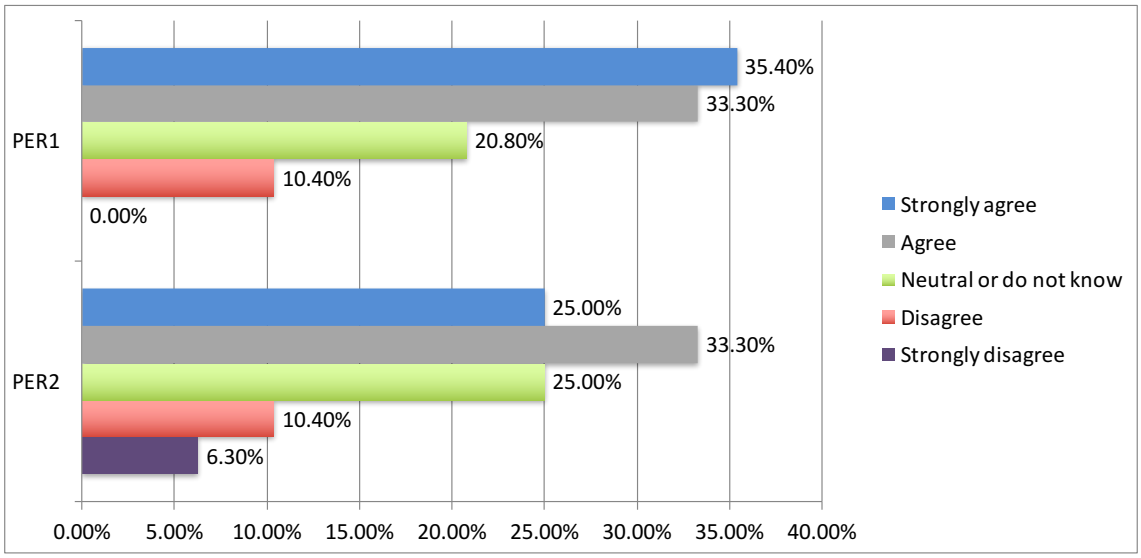


Figure 7.22: The results of PER measurement items (business sector)

In item PER1, the respondents are asked about the efficiency of the Saudi e-Government infrastructure to provide successful e-Services for the business sector. The results reveal that 68% agree that the current e-Government infrastructure is inefficient, 20% are neutral or do not know and around 10% disagree. The results show that the majority believe that the e-Government infrastructure in Saudi Arabia is currently not able to provide efficient e-Services.

Almost 70% of the participating business entities are large companies and 85% of them do not have a positive perception about the efficiency of the Saudi e-Government infrastructure. As such large companies conduct a large volume of government transactions it is likely that they have faced difficulties and problems when using e-Services and e-Transactions that influence their perception about the e-Readiness of e-Government systems. Furthermore, 69% of the respondents who were not fully satisfied with using e-Government agree with this statement. It is very likely that they would see the e-Government infrastructure as too inefficient to provide successful e-Services for their businesses.

With regards to item PER2, the respondents are asked about the ability of government agencies in Saudi Arabia to successfully implement e-Government services for the business sector as required. Figure 7.22 shows that 58% believe that government agencies are not able to implement successful e-Government services for the business sector. On the other hand, 16% of the respondents disagree with that; and a relatively high percentage of participants (25%) chose the “Do not know or neutral” option. When investigating the results, around 84% of respondents who were not fully satisfied with their previous use of e-Government services do not show a positive perception about the ability of government agencies to implement successful e-Services. Furthermore, 67% of the respondents who did not have a positive perception about the e-Readiness of government agencies were large companies. As stated in the analysis for the

previous item, large companies perform more transactions; thus, it is likely that they have faced more problems and difficulties when performing e-Transactions, which influences their trust in the ability of government agencies.

The composite score for this variable is 2.43, indicating a negative e-Readiness perception. The results of this variable also gave an indication of the negative attitudes towards the current infrastructure and the ability of government agencies to implement successful and effective e-Government services for the business sector.

7.4 Statistical analysis and hypotheses assessment from the business sector's perspective

The previous section (Section 7.3) discussed the results of the descriptive analysis of the data collected from business sector users. The findings indicate the level of influence of each factor of the EGAUM. The findings are summarized and interpreted in this section, and the relationships between the proposed factors and users' adoption and intention to use are also assessed. This will demonstrate which hypotheses are supported and which are unsupported; and this is also discussed. The statistical analysis procedures are similar to those utilised in the previous two chapters (Chapters 5 and 6) with the samples of citizens and government employees. These procedures include the normality test (Shapiro-Wilk procedure), outlier cases treatment (winsorization) and the relationships test (Spearman's correlation coefficient).

7.4.1 Personal Factors (PF)

The Personal Factors that are proposed in the EGAUM involve age, gender, education level, location and income. For the **age factor**, the results show no significant differences between the age groups in terms of intention to use. Table 7.14 below presents the composite scores of the *Intention to Use* variable for different age groups; and it shows that *ITU* is high for all different categories. Although one category (Over 60 years old) has the highest *ITU*, it may not be considered as statistical evidence as only one case represents this category. All the other age bands showed a high *ITU* and this indicates that hypothesis H1 is not supported.

H1: Different age groups will have different levels of intention to use e-Government systems/services.

Table 7.14: Intention to Use by different age groups among business sector users

Age groups	ITU composite scores					Total
	1.00	**1.50**	**2.00**	**3.00**	**5.00**	
18 – 30	7 (70%)	2 (20%)	1 (10%)	0	0	10
31 – 45	22 (70.9%)	3 (9.6%)	4 (12.9%)	1 (3.22%)	1 (3.22%)	31
46 – 60	4 (66.6%)	2 (33.3%)	0	0	0	6
Over 60	1 (100%)	0	0	0	0	1
Total	34	7	5	1	1	48

Moreover, the majority of interviewees believe that age is not an influential factor. However, two of them stated that it may affect adoption and use, but they associate this effect with education and knowledge about using computers. One of them said *"... old people especially who are not educated may not prefer using them"*. The other participant said *"... the elderly usually do not know how to use computers and this affects the companies' older employees who are used to going to government organisations themselves to perform transactions, it would be difficult for them to use computers"*. This also shows that age alone is not an influential factor that could impact users from the business sector. The influence of age factor is very likely to be associated with the education level and the willingness to learn new things and use technology.

For the **gender factor**, the results reveal that female participants have a higher intention to use than male participants. Table 7.15 shows that all the female participants were in the highest band of the *ITU* composite score. The male participants also have a high intention to use but their *ITU* composite scores were distributed across several lower scores. Therefore, hypothesis H2 is supported for the business sector sample. Although the interviewees believed that gender would not influence adoption and use, the statistical results clearly show that females have a higher intention to use. This may be because it is difficult for female employees to visit government agencies in cases where they need to complete their companies' transactions, due to barriers such as transportation limitations and a lack of experience in personal dealings with government departments. Thus, females may have a higher intention to use electronic services than male users who can complete their business transactions in person when they need. Thus hypothesis H2 is supported.

H2: Different genders will have different levels of intention to use e-Government systems/services.

Table 7.15: Intention to Use by gender of business sector users

Gender	ITU composite scores					Total
	1.00	1.50	2.00	3.00	5.00	
Male	29 (67.4%)	7 (16.2%)	5 (11.6%)	1 (2.3%)	1 (2.3%)	43
Female	5 (100%)	0	0	0	0	5
Total	34	7	5	1	1	48

With regards to the **education level**, the results also show variation in intention to use across different education levels. Table 7.16 shows that participants with the highest education levels, namely a Bachelor or Master degree, had the highest *ITU* scores. Although the participants who have only completed their public education also had a high level of *ITU*, the intention to use was generally higher for those with higher education levels. Thus, hypothesis H3 is supported.

H3: Users with different levels of education will have different levels of intention to use e-Government systems/services.

Table 7.16: Intention to Use by business sector users with different education levels

Education level	ITU composite scores					Total
	1.00	1.50	2.00	3.00	5.00	
Secondary school or less	10 (71.4%)	2 (14.2%)	1 (7.1%)	1 (7.1%)	0	14
Diploma	5 (50%)	2 (20%)	3 (30%)	0	0	10
Bachelor	15 (75%)	3 (15%)	1 (5%)	0	1 (5%)	20
Master	4 (100%)	0	0	0	0	4
Total	34	7	5	1	1	48

Additionally, there is general support amongst the interviewees for the impact of education level on adoption and use. One of the participants stated that *"... for the employee who just completed his public education, using these e-Services will be difficult"*. Another said *"... the educated person would prefer using electronic services and technology"*. The impact of education level is not directly associated with having high academic qualifications, as using e-Services does not require having these qualifications. However, its impact is associated with the acceptance and willingness to use technology and electronic services, as educated persons would be possibly more open to accept and use technology. Therefore, awareness and training would play a significant role in minimising the impact of this factor.

The **location factor**, was not statistically explored in this research; as the data for this sample was collected from two different major cities in Saudi Arabia, namely, Riyadh and Jeddah.

Other locations such as rural areas, villages and small cities were not included due to the time scale for this research. Thus, there is no statistical evidence that would assess the acceptance or rejection of hypothesis H4. However, the likelihood of location impacting on e-Government adoption and utilisation was considered in the interviews. One of the interviewees stated, *"It may have an impact in terms of the Internet connection, as it is usually weak or non-existent in some rural areas"*. This would affect the adoption and use of businesses in such rural areas. Another participant said *"Yes, it will have an impact; as some businesses are based in rural areas so I think they need such e-Services more. So the Internet connection must be good in these places and also they need more awareness and education campaigns"*. However, some other participants believed that location was not an influential factor.

In relation to **income,** the annual net profit of the business was considered the main financial factor that could influence e-Government adoption and utilisation from the business sector perspective. Thus, information about annual net profit was collected from respondents who were either business owners or employees working in the participating companies. Unexpectedly, the collected data about annual net profit did not provide enough statistical evidence to support or reject hypothesis H5. This is because the majority of the participants did not know their companies' annual net profit; and the data collected from the rest of the respondents did not provide sufficient statistical evidence to assess the influence of this factor.

However, the possible impact of this factor was considered in the interviews that were conducted with some of the participants. The majority thought that this factor would have no effect on adoption and use by users from the business sector. However, two participants believed that income might have an influence, as one of them said *"... some of the e-Services and e-Transactions require subscription fees. So if the company or the institution cannot afford these fees, the government relations department employees would have to perform transactions in person and would not use e-Transactions systems"*. The other participant stated: *"Yes, it might affect it, but indirectly. For example, if the company has financial problems, their use will be decreased because they would not be able to afford e-Transactions fees, and also they might dismiss the employees who deal with these e-Services"*. It is likely that the impact of the income factor would be related to e-Services and e-Transactions fees more than the affordability of having computers or the Internet to use e-Services.

7.4.2 Motivational Factors (MF)

As per the research model (EGAUM), this construct comprises 5 factors which are *PB*, *SC*, *AW*, *FQS* and *PE*. The descriptive analysis of these factors was discussed in the previous section. The results summary and interpretation are shown in Table 7.17 below which gives indications of the influence of each factor (except *PE* since this factor was measured with Likert-type items). The relationships between these factors and intention to use by users from the business sector are assessed and discussed in the following sections. It was found that *PB*, *AW* and *PE* were the most significant factors.

Table 7.17: Summary of the descriptive analysis of MFs from the business sector perspective

Factor	N	No. of items	Mean	S.D.	Results interpretation
PB	48	7	1.37	0.49	Very influential
SC	48	5	2.44	0.79	Influential
AW p1	48	3	2.14	0.78	Influential
AW p2	48	6	1.97	0.97	Influential
FQS p1	48	4	2.21	0.66	Neutrality
FQS p2	48	6	1.74	0.95	Very influential

7.4.2.1 The Perceived Benefits factor (PB)

As discussed in the descriptive analysis, the overall score of the *PB* factor (M=1.37) indicates that it is very likely that this factor positively influences and increases adoption and utilisation by users from the business sector. This result supports the hypothesized relationship between the *Perceived Benefits* factor and the *Intention to Use* e-Government systems (H6).

H6: There is a positive relationship between perceived benefits and intention to use e-Government systems/services.

The relationship between the two variables, namely, the *Perceived Benefits* factor and *Intention to Use* was statistically assessed utilising Spearman's correlation coefficient. It was found that there is a strong positive correlation between *PB* and *ITU*, $r_s = .543,\ n = 48$, with a high level of perceived benefits associated with a high level of intention to use e-Government. This correlation was statistically significant, $p < .0005$. This result also supports hypothesis H6; and Figure 7.23 shows the trend line of this relationship. This indicates that to get business owners and business representatives to adopt and use e-Government services, these services must be perceived as genuinely useful for their business; and be implemented efficiently and effectively in order to meet the needs of this category of stakeholder.

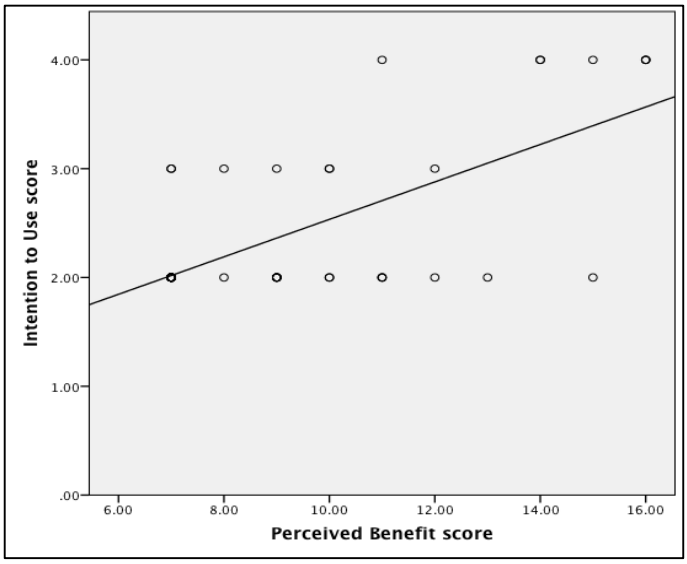


Figure 7.23: The relationship trend line between PB and ITU (business sector)

The findings from this factor's results are in accordance with other studies' results reported in the literature. Carter & Belanger (2004; 2005) found that perceived usefulness was one of the significant factors that influence adoption and use in the United States. They stated that users' intention to use e-Government services would increase if they perceive the e-Services to be useful. Dimitrova & Chen (2006) also found that perceived usefulness is positively related to e-Government adoption. They suggested that choosing to adopt e-Government services is rooted in the perceived benefits of using such e-Services. Rogers in his Diffusion of Innovation theory (DOI) also suggested that the perceived benefits of using an innovation have a positive influence on the decision to adopt (Rogers, 1995).

Businesses are normally required to perform many transactions that are required by government agencies. Obtaining commercial permissions, applying for imported goods certificates and completing workers' paperwork are examples of the many activities that users from the business sector need to do. An ability to complete these tasks through the Internet is very useful. Since increasing users' perception of the benefits increases their intention to use e-Government services, government agencies should disseminate the benefits and advantages of using such online services and also present the potential of implementing such e-Services. Government organisations should play a proactive role in popularizing the benefits of online government e-Services to users from the business sector.

All the respondents who participated in the interviews showed a positive perception of several benefits. For example, one of them stated *"... using e-Government would save time and effort for both customers and government employees, and would increase the focus on the quality of the work outcomes"*. Another participant commented on reducing cost saying: *"... it is better than giving the transactions to somebody else or to service offices, which perform them for*

extra fees". Moreover, one of the interviewees stated *"... it helped me to avoid paying delay penalties; as I can perform e-Transactions anytime even at weekends and on holidays"*.

However, several issues that are likely to influence business sector users' perceptions of benefits are reported by the interviewees; for example, the need to visit government agencies to complete e-Transactions is one of these issues. One of the interviewees stated: *"... many of the government transactions require a personal visit to complete them, for example to confirm the uploaded documents or even to receive documents"*. Moreover, failures and technical issues in e-Services systems are also reported by some of the participants. One of them said: *"Sometimes the system is down so I need to go to the agency myself. Also I need to visit the agencies for some e-Transactions to provide or receive documents"*. The lack of clarity about the documents required and the progress of e-Transactions were also reported issues. One of the interviewees stated: *"One of the issues that I often face is that the e-Transaction process stops at a certain phase in the system for a long time and I do not know why. So I need to go to the agency to find out what the problem is with the procedure, and this usually delays my transactions"*. Furthermore, the majority of the interviewees affirmed the importance of the speed of e-Transaction processing, as this is crucial for the business sector. Therefore, these issues need to be considered when implementing e-Government services for the business sector as they impact on the level of their perceived benefits.

7.4.2.2 The Socio-Cultural factor (SC)

The results of the descriptive analysis of this factor can be interpreted as showing that *SC* is an influential factor (*M* = 2.44*)*. However, this result does not represent a high level of influence; and indicates that the intention to adopt and use by users from the business sector is not influenced very much by social and cultural aspects. This may be because of the nature and environment of the business sector. Users from the business sector normally need to perform a lot of government transactions and obtain many services for their businesses regardless of any other external factors such as their social lives or their culture.

Although the normality test indicated that *SC* data was normally distributed (as assessed by Shapiro-Wilk's test, $p>.05$), Spearman's correlation procedure was utilised to assess the relationship between *SC* and *ITU* since *ITU* was not normally distributed. The results showed a positive relationship between *SC* and *ITU*, $r_s = .098, n = 48, p > .05$. Although this relationship can be considered weak, the result of the correlation coefficient shows a positive correlation. Thus, the findings from the descriptive analysis of this factor as well as the correlation result support the hypothesized positive relationship (H7).

H7: There is a positive relationship between Socio-Cultural factor and intention to use e-Government systems/services.

It is clear from the findings that the correlation is weak although positive; therefore, we can conclude that the social and cultural aspects do not significantly influence the adoption and utilisation of users from the business sector when using e-Government services for their businesses' transactions. There is no other study (to the knowledge of the researcher) that considers this factor from the business sector perspective. However, the strong influence of the *Socio-Cultural* factor on the intention to use e-Government services was not supported in several studies in the literature that considered other stakeholders. For example, Alshehri et al. (2012) found that social aspects do not have a significant effect on intention to use e-Government services; and AlAwadi & Morris (2009) found that social influence was not significant for many participants in their study. As stated earlier, users from the business sector might not be much affected by social and cultural norms due to their high desire for online government services.

7.4.2.3 The Awareness factor (AW)

There was a clear agreement from the results of the descriptive analysis about the positive influence of the *Awareness* factor on the adoption and utilisation of e-Government systems. The findings revealed that it is likely that *Awareness* would positively influence the adoption and usage level of users from the business sector. Statistically, the normality test on *AW* data showed a normal distribution (as assessed by the Shapiro-Wilk test, $p > .05$) but *ITU* data was not normally distributed; therefore, the correlation was assessed using Spearman's correlation procedure for the *AW* factor and *Intention to Use*. It was found that there is a statically significant and positive relationship between *AW* and *ITU*, $r_s = 0.46$, $n = 483$, $p < .0005$. The results of both descriptive and statistical analysis thus support the hypothesized relationship H8. Figure 7.24 below shows the positive relationship trend line between *AW* and *ITU*:

H8: There is a positive relationship between awareness factor and intention to use e-Government systems/services.

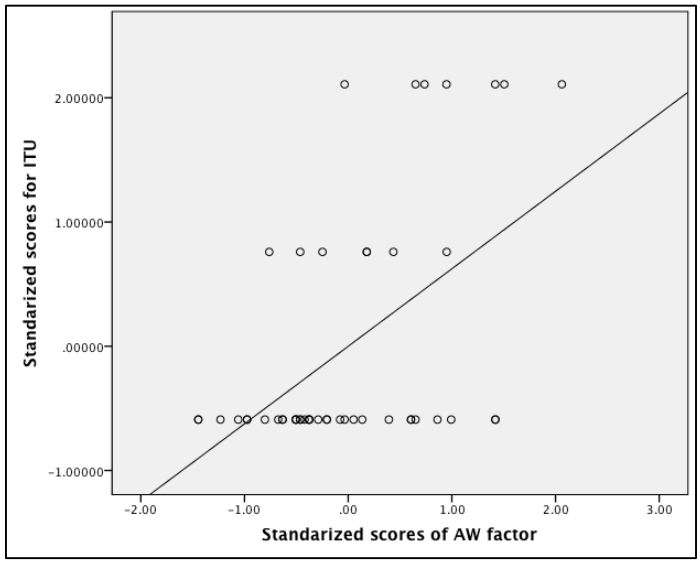


Figure 7.24: The relationship trend line between AW and ITU (business sector)

Sufficient and efficient awareness campaigns are needed to achieve high levels of adoption and usage of e-Government services. This is even more important for e-Services provided to the business sector as they have large volumes of government transactions that need to be completed. Increasing awareness of the benefits and potential of using e-Government services would significantly decrease the workload on government agencies, as customers from the business sector would be encouraged to use online services rather than visiting agencies. These findings are similar to those reported in AlAwadi & Morris (2009) whose study was conducted in Kuwait. They found that Awareness plays a vital role in the use of e-Government. Moreover, Alshihi (2005) also found that users' awareness about e-Government correlates positively with their willingness to use it. Baker & Bellordre (2004) state that lack of awareness about the existence of certain technology or the benefits that it could provide is a primary concern associated with the diffusion and use of technologies in general. This is emphasized in the case of diffusion, adoption and utilisation of e-Government systems, as they are national and multi-users systems.

The importance and influence of awareness was strongly supported by the interviewees. However, some of them stated that there is a lack of and weakness in awareness campaigns and others stated that they had not heard about such awareness or training campaigns. One of the participants said, *"... the awareness campaigns are not enough, we were often surprised that many of e-Services and e-Transactions became electronic"*. Moreover, another interviewee said about awareness and advertising campaigns *"I wish there were more because currently, there are not enough. Also the focus of most of government organisations is on Twitter only and there are many people who do not use Twitter, they should diversify the sources of awareness"*. Training is also seen as an important aspect of increasing awareness. One of the participants

stated that *"... providing training on use, either from the providers or from the company is very important to increase acceptance and use"*. Thus, more awareness training and advertising campaigns should be provided for the users from the business sector.

Different methods for raising awareness need to be taken into consideration depending on the nature of the stakeholder. For example, conducting seminars and exhibitions that are dedicated to increasing awareness of e-Government services and potential is likely to be more influential than advertisements on TV, radio or press interviews. Moreover, making visits to companies, specifically the large ones, to publicize e-Services and their benefits is likely to be a very useful way to increase awareness level, which in turn increases the diffusion, adoption and utilisation levels of this kind of stakeholder.

7.4.2.4 The Functional Quality of Service/System factor (FQS)

The composite scores for the two parts involved in measuring the influence of *FQS* can be interpreted as showing that this factor is influential from the business sector perspective (see Table 7.17). In terms of statistical analysis, the relationship between the *FQS* factor and *Intention to Use* was assessed. The normality test showed a normal distribution for *FQS* data ($p>.05$); however, Spearman's correlation coefficient was utilised as *ITU* data was not normally distributed. The result of the correlation test showed a positive relationship between *FQS* and *ITU* although the correlation was weak, $r_s = .165, n = 48, p > .05$. The relationship is thus not statistically significant but it is positive. This means the higher the functional quality of e-Service, the more users from the business sector will intend to adopt and use e-Government services. Thus, the hypothesized relationship H9 is supported.

H9: There is a positive relationship between functional quality of service/system and intention to use e-Government systems/services.

E-Government should provide high quality services and delivery processes (Savoldelli et al., 2014). The importance of this positive relationship is in accordance with that reported in other studies in the literature. For example, a study conducted in Egypt found that service quality positively affects the use of e-Government (Abdelsalam et al., 2012; Elkadi, 2013). Moreover, another study, conducted in Pakistan, found that the quality of e-Government services significantly influences the intention to conduct e-Transactions (Rehman et al., 2012). In the current study, the influence of this factor was not found to be significant, as in the aforementioned studies, but it was found to have a positive relationship with *ITU*. This is because those studies were conducted with different e-Government stakeholders, namely government employees in the former and citizens in the latter. This means that *FQS* has less impact, on users from the business sector, than on public users or government employees.

7.4.2.5 *The Previous Experience factor (PE)*

PE was measured with three items using three different scales depending on the nature of the question. All three items were dependent on other prior items and their descriptive analysis was discussed earlier in Section 7.3 of this chapter. The correlation between the *PE* factor and *Intention to Use* for respondents who have used different kinds of e-Services (government and non-government) was found to be positive and significant $r_s = .354, N=33, p<.0005$ (as assessed by Spearman's correlation coefficient). Thus, the hypothesized relationship (H10) between *Previous Experience* and *Intention to Use* is supported and the relationship trend line is presented in Figure 7.25.

H10: There is a positive relationship between previous experience and intention to use e-Government systems/services.

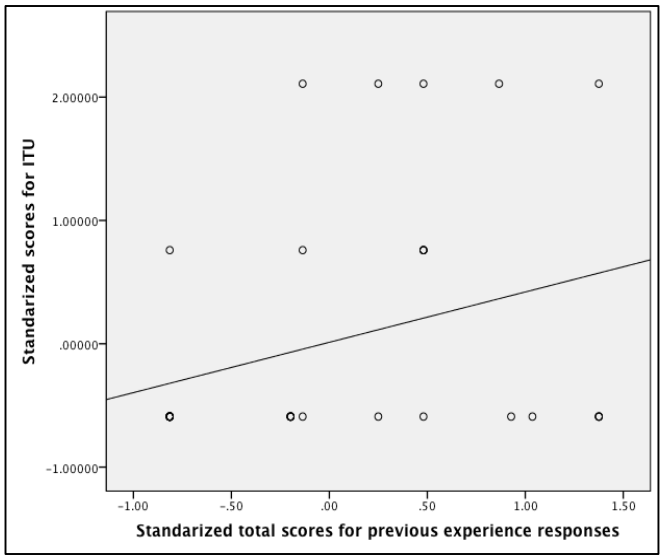


Figure 7.25: The relationship trend line between PE and ITU (business sector)

Previous experience is important in terms of using online e-Services; and can either encourage or discourage users from using such e-Services in the future. In other words, previous experience can predict and determine the users' intention to use online services again. This is because perceptions are based on previous experience and include perceptions about trustworthiness, ease of use and usefulness. AlAwadi & Morris (2009) found in their research that a number of participants held negative views of e-Government due to negative previous experience. Those participants reported that these negative experiences would deter them from using e-Services in the future. They also found that trust in e-Commerce leads to trust in e-Government; which means that trust gained from previous experience of using e-Commerce would influence the level of trust about using e-Government (AlAwadi & Morris, 2009).

The participants who were interviewed also believed in the importance of previous experience. The majority stated that their previous use of e-Services and e-Transactions would encourage them to use them more in the future. However, the influence of such experiences can also have a negative impact. One of interviewees stated, *"... if the system problems recur and the transactions are delayed, I would prefer to go in person"*. Another said about previous experience: *"Yes, for sure it will have an impact, for example if I use an e-Service and it was bad, I would not be eager to use it again if it has not been improved"*. These findings suggest that it is important to consider this factor when implementing new e-Government services and systems as first impressions have an impact on future intention to use, especially for frequent users such as those in the business sector.

7.4.3 Technical Factors (TF)

Three factors were proposed in this construct, namely, *Perceived Simplicity (PS), Technical Quality of Service/System* (*TQS*) and *Accessibility* (*ACC*). The measurement and descriptive analysis of these factors were presented and discussed in Section 7.3 of this chapter. The interpretations of the descriptive analysis results are summarized in Table 7.18. It was found that all these factors positively correlate with the intention to use, although the correlations were weak; and none of them ranked among the most significant factors to influence users' intention to use or their perception of e-Government readiness. The results of the statistical analysis will be presented and discussed in the following sections:

Table 7.18: Summary of the descriptive analysis of TFs from the business sector perspective

Factor	N	No. of item	Mean/Median	S.D./IQR	Results interpretation
PS p1	48	3	1.96	0.63	Influential
PS p2	48	3	1.78	0.89	Very influential
TQS p1	48	2	2.40	0.96	Influential
TQS p2	48	3	1.84	0.87	Influential
ACC p1	48	1	*Md* = 2	IQR = 1, 2.5	Influential
ACC p2	48	3	1.71	0.85	Very influential

7.4.3.1 The Perceived Simplicity factor (PS)

The descriptive analysis of this factor revealed that *PS* is likely to be an influential factor from the business sector perspective. As per the research model (EGAUM), *PS* was proposed to have a positive relationship with intention to use as well as perceived e-Readiness. Therefore, such correlations were assessed statistically using Spearman's correlation procedure (as the data for

both *ITU* and *PER* was not normally distributed). There was a weak, positive correlation between *PS* and *ITU*, r_s = .110, N = 48, p > .05; and a similar, weak but positive correlation was found between *PS* and *PER*, r_s = .195, N=48, p>.05. Although the correlations were not strong, the results showed positive relationships that indicate a high level of perceived simplicity is associated with a high level of perceived e-Readiness and also a high level of intention to use. Thus, the results support the hypothesized relationships in H11a and H11b.

H11a: There is a positive relationship between perceived simplicity and intention to use e-Government systems/services.

H11b: There is a positive relationship between perceived simplicity and perceived e-Readiness of e-Government.

Since the majority of the participants were from large companies (around 70%) and likely to be using a large amount of e-Services and e-Transactions and also because most of them had very good Internet experience (91% were daily Internet users), the simplicity factor was not expected to be a significant factor due to their frequent use of the Internet and online services. AlAwadi & Morris (2009) suggest in their research that the greater one's Internet use experience, the easier it is to learn and use e-Government services. Carter & Belanger (2004) found that ease of use, which is similar to simplicity in the current research, was not significant in the intention to use e-Government for users with a high level of Internet experience. However, e-Government services still need to be straightforward and simple to use in order to enable all potential users, either with high or low experience, to benefit from such e-Services. The importance of simplicity is emphasized when it comes to providing e-Services to the business sector where a large number of e-Services and e-Transactions are needed.

Some interviewees mentioned issues that make the use of e-Services and e-Transactions difficult and complex and which would affect their use. One of the interviewees said that *"... most of the options fields in the e-Services have wrong or unclear options"* which makes use difficult. Another interviewee stated that *"... some e-Service websites do not work with the required quality and efficiency; they contain many mistakes and there is a lack of clarity"*. Another interviewee mentioned another issue was *"... the lack of clarity of the required procedures to perform e-Transactions. Sometimes I do not know the correct sequence of the required procedures and this can impose financial penalties"*.

On the other hand, some of the interviewees made suggestions about improving ease the use. One of them said: *"... there should be one website that combines all e-Services and e-Transactions that are related to the business sector; also there should be a notification service that notifies users about different things such as the related transactions required or the expiry*

dates of their documents". Another participant said: *"I wish that there was more flexibility in modifying the information related to the e-Transactions conducted, this would make use easier"*.

7.4.3.2 The Technical Quality of Service/System factor (TQS)

The *TQS* factor was measured with two groups of items, as discussed in Section 7.3. The results from the descriptive analysis indicated that *TQS* is an influential factor. Although a significant effect was not revealed; the results gave an indication that there is a positive influence on the adoption and utilisation level. In terms of statistical analysis, Spearman's correlation procedure was utilised to assess the hypothesized relationships with this factor. It was found that there is a positive relationship between *TQS* and *ITU*, $r_s = .024, N = 48, p > .05$; and a positive correlation was also found between *TQS* and *PER*, $r_s = .108, N = 48, p > .05$. This means that a high level of technical quality of service/system positively influences users' intention to use and their perceived e-Readiness. Although the correlations were weak, the results support the positive hypothesized relationships in H12a and H12b:

H12a: There is a positive relationship between technical quality of service/system and intention to use e-Government systems/services.

H12b: There is a positive relationship between technical quality of service and perceived e-Readiness of e-Government.

Technical aspects in e-Government systems are crucial in terms of quality of service, especially when they are visible to the users. Technical issues in e-Government systems might interrupt service transactions and processing performance which can cause severe delays to all government agency work (AlAwadi & Morris, 2009). Several studies in the literature found that the quality of technical aspects were vital and has a significant impact on the level of use. For example, Alshehri et al. (2012) found that website quality, which is one of the technical aspects, directly impacts on e-Government usage behaviour. Their study confirmed the importance of the quality of government websites as one of the significant factors for e-Government adoption. Nevertheless, the results here did not show a statistically significant impact of *Technical Quality of Service* on the intention to use and E-Readiness perception of users from the business sector. This indicates that *TQS* is not a fundamental factor that determines adoption and utilisation; but this does not diminish the positive influence of high technical quality.

With regards to the interviewees' responses, the participants mentioned several technical issues that may affect adoption and use, such as frequent system failures and crashes. One of the interviewees stated: *"The main problems are the slowness of the Internet connection and the*

high load on the e-Services websites which also cause slowness and crashes, especially at peak times". Another participant said: *"The issues that I frequently see are crashes and the unresponsiveness of e-Services websites, sometime this lasts a couple of days, which delays our transactions"*. As stated earlier in the *PB* factor section, the fast speed of processing and completing e-Transactions is one the most important features that the business sector needs when using e-Government systems. Technical failures and system crashes can cause severe delays in completing e-Transactions which can negatively affect the companies' activities as well as their level of adoption and use.

7.4.3.3 The Accessibility factor (ACC)

The results of the descriptive analysis of the *ACC* factor indicated its importance and possible influence on the adoption and utilisation by users from the business sector. *Accessibility* was found to be an influential factor as indicated by the interpretation of the descriptive analysis (see Table 7.18). Its relationship to users' intention to use was assessed statistically and a weak positive relationship was found, $r_s = .109, N = 48, p > .05$. Thus, hypothesis H13a is supported.

H13a: There is a positive relationship between accessibility and intention to use e-Government systems/services.

On the other hand, the results showed that the hypothesized positive relationship (H13b) between *ACC* and *PER* was not supported, $r_s = -.198, N = 48, p > .05$.

H13b: There is a positive relationship between accessibility and perceived e-Readiness of e-Government.

These findings indicate that the *Accessibility* factor positively influences intention to use but not the perception of e-Readiness. In other words, it is likely that the existence of authorized offices to help with e-Government use, having mobile applications to use e-Government services and the provision of several features related to accessibility, such as 24/7 e-Services, would positively affect the intention to use of business sector users; but that these aspects do not affect their perceived e-Readiness. However, the participants are likely to have a negative perception of the readiness of Saudi e-Government infrastructure and the ability of government agencies to provide sophisticated features related to e-Government accessibility, such as e-Government support offices and successful mobile applications.

In addition to the aforementioned accessibility tools and features, one of the interviewees mentioned another important aspect of accessibility that could positively affect the adoption and use of business sector users; stating that: *"It is hard sometimes to find and access the e-*

Services' websites, each e-Service is located in a different website". Therefore, he suggested that all e-Services and e-Transactions needed by the business sector should be placed in one website in the form of a one-stop-shop, which would ease and speed up accessibility.

7.4.4 Reliability Factors (RF)

Table 7.19 below shows the interpretations of results for the descriptive analysis of the factors involved in this construct. From the descriptive analysis results, the *Perceived Trust (PT)* factor was found to be an influential factor and the *Regulations and Policies (RP)* factor was found to be a very influential factor on adoption and utilisation. From the statistical analysis, neither of these factors was found to be significant in terms of direct influence on intention to use. However, *RP* was found to be a significant factor that correlates positively with perceived e-Readiness of e-Government.

Table 7.19: Summary of the descriptive analysis of RFs from the business sector perspective

Factor	N	No. of item	Mean	S.D.	Results interpretation
PT	48	9	2.34	0.71	Influential
RP	48	4	1.71	0.79	Very influential

7.4.4.1 The Perceived Trust factor (PT)

This factor was measured with nine items (as discussed in Section 7.3) and a single composite score was computed for them. The normality test showed normal distribution for this factor' data as assessed by Shapiro Wilk $p > .05$; but because the other variables' data (*ITU* and *PER* data) was not normally distributed, Spearman's procedure was used to assess their relationships. The results showed that there is only a weak positive relationship between *PT* and *ITU*, $r_s = .080$, $N = 48$, $p > .05$ and also between *PT* and *PER*, $r_s = .097$, $N = 48$, $p > .05$. Nevertheless, the hypothesized positive relationships in H14a and H14b are supported.

H14a: There is a positive relationship between perceived trust and intention to use e-Government system/services.

H14b: There is a positive relationship between perceived trust and perceived e-Readiness of e-Government.

These weak relationships and influences are likely because the majority of the participants in this sample were employees (72%) and they possibly do not pay as much attention to trust

issues as owners. Performing e-Government transactions and services are considered to be part of their job activities, and trust aspects may not affect their e-Readiness perception or their intention to use. This does not mean that the data that they provide online when performing e-Services and e-Transactions for their businesses is not important to them or that they are careless about it, but the influence of trust is a matter of degree, and its influence differs from one user group to another. For example, this factor is more important for citizens than users from the business sector. Since the citizens need to provide personal information, and sometimes sensitive information that belongs directly to them; their perceived trust is more likely to influence their adoption and intention to use e-Government.

7.4.4.2 The Regulations and Policies factor (RP)

The *Regulations and Policies* factor (*RP*) was measured by four items and a single composite score was produced for the correlation test. *RP* data was not normally distributed and therefore, Spearman's correlation coefficient was utilised. The relationship between *RP* and *ITU* was assessed and the results showed a positive correlation, r_s = .107, N = 48, p > .05. Additionally, the relationship between *RP* and *PER* was also assessed and it was found that there is a statistically significant and positive relationship between both variables, r_s = .402, N = 48, p < .0005. Thus, both hypotheses related to this factor (H15a and H15b) are supported. The relationship trend line between *RP* and *PER* is presented in Figure 7.26:

H15a: There is a positive relationship between properly implementing regulations & policies and intention to use e-Government systems/services.

H15b: There is a positive relationship between properly implementing regulations & policies and perceived e-Readiness of e-Government.

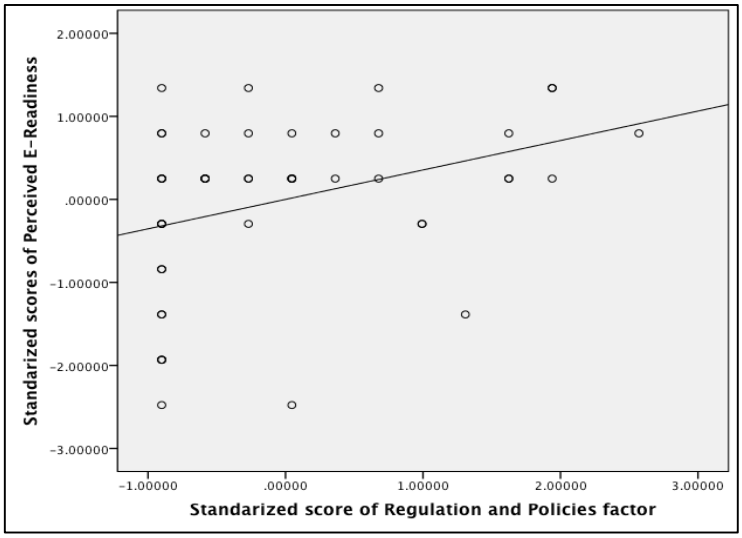


Figure 7.26: The relationship trend line between RP and PER (business sector)

The descriptive analysis of this factor also indicated a strong influence of the *RP* factor which can be seen in Table 7.19. The results of both analyses (descriptive and statistical analysis) showed that the implemented regulations and policies for using e-Government services are likely to have a significant influence on the adoption and utilisation of e-Government and perceptions of its e-Readiness. The findings showed how implementing visible, strict and clear regulations and policies are important to users from the business sector. This means that such users are eager to have legislative controls for using online government services because conflicts and regulatory violations would cause a negative impact on their business and their performance. Moreover, the existence of clear regulations and laws for both parties' rights (business users and government agency) and making them available and visible to the users is crucial. This importance would be more emphasised when large business entities, like the participating entities, are using such online governmental systems.

The importance and influence of this factor was also reported by the interviewees and the majority stated that regulations and policies need to be clear and comprehensive. Some issues related to this factor were also reported; for example, one of the participants stated that such regulations and policies are not always provided and he said: *"It is important for sure, but they are provided clearly on some e-Service websites but do not exist on others"*. Another interviewee stated that *"... sometimes the companies connect electronically with some government systems and the employees who work with these e-Services systems do not see and do not know about these rules and policies for use. However, if these were provided clearly to the employees, it would let them know their rights and duties, which would positively affect their use and confidence"*.

The E-Government environment requires a comprehensive set of regulations and laws that need to be applied by the e-Services providers to allow them to control the provision of online services and also to enhance the users' perceptions about privacy and security (Barnnat et al, 2010). Regulations and policies related to the use of e-Government systems are therefore a vital part of creating a favourable environment to promote trusted government services over the Internet; and these must be updated regularly to encourage users to read and follow them.

7.4.5 Perceived E-Readiness (PER) and Intention to Use (ITU)

Perceived E-Readiness is a dependent variable that is proposed to correlate with several independent variables including *PS*, *TQS*, *ACC*, *PT* and *RP*. The relationships between this variable (*PER*) and the other five independent variables were previously assessed, and it was found that all of them have positive relationships with *PER* except the *ACC* factor. The only

significant and positive relationship was found between *RP* and *PER*. The correlation between *PER* and *ITU* was also tested to see whether *Perceived e-Readiness* of e-Government would positively influence *Intention to Use* e-Government. There was a positive but weak relationship between both variables, $r_s = .003, N = 48, p > .05;$ and, although the correlation was very weak, the test showed a positive relationship which means that the hypothesized relationship H 16 is supported.

H16: There is a positive relationship between perceived e-Readiness of e-Government and intention to use e-Government systems/services.

This weak relationship between *PER* and *ITU* is likely because of the general negative perception amongst the participants from the business sector about the readiness of the Saudi e-Government, which was presented and discussed in Section 7.3. This negative perception possibly exists because of several reasons such as Internet connection issues, frequent failures and crashes in e-Government systems, low quality of some e-Services and the lack of motivation in some agencies to provide or enhance their e-Services. Previous negative experiences of conducting government transactions using the traditional ways might also have had a negative impact on the e-Readiness perception of business sector users.

7.5 Conclusion

This chapter attempts to understand Saudi users' intention to adopt and use e-Government systems and services from a business sector perspective. It provides a descriptive analysis that presents and discusses the items involved in measuring each factor, as well as interpreting the results of this analysis. This analysis is important as it investigates different aspects of each factor and also helps to validate the proposed model (EGAUM) and establish the importance of its constructs. This chapter also involves statistical analysis which assesses the hypothesized relationships between the proposed factors and the users' intention to use and their perception about the readiness of e-Government. This analysis determined the most significant factors that influence the users' adoption and use. Table 7.20 below summarizes the results of the correlation tests. This chapter also discussed the findings from the semi-structured interviews that provided a better understanding of the influence of the proposed factors.

Table 7.20: Summary of the results of the hypothesized relationships in the business sector sample

Hypothesized relationship	Direction of relationship	Hypothesis test	Relationship strength
PB → ITU	**Positive**	**Supported**	**Strong (r_s = 0.543**) sig**
SC → ITU	Positive	Supported	Weak (r_s = 0.098)
AW → ITU	**Positive**	**Supported**	**Moderate (r_s = 0.463**) sig**
FQS → ITU	Positive	Supported	Weak (r_s = 0.165)
PE → ITU	**Positive**	**Supported**	**Moderate (r_s = 0.354*) sig**
PS → ITU	Positive	Supported	Weak (r_s= 0.110)
PS→ PER	Positive	Supported	Weak (r_s = 0.195)
TQS → ITU	Positive	Supported	Weak (r_s= 0.024)
TQS → PER	Positive	Supported	Weak (r_s = 0.108)
ACC → ITU	Positive	Supported	Weak (r_s= 0.109)
ACC → PER	Negative	Not supported	Weak (r_s = -0.198)
PT → ITU	Positive	Supported	Weak (r_s= 0.080)
PT → PER	Positive	Supported	Weak (r_s = 0.097)
RP → ITU	Positive	Supported	Weak (r_s= 0.107)
RP → PER	**Positive**	**Supported**	**Moderate (r_s = 0.402**) sig**
PER → ITU	Positive	Supported	Weak (r_s = 0.003)

*. Correlation is significant at the 0.05 level. **. Correlation is significant at the 0.01 level.

From the business sector perspective, four factors were found to be significant for intention to use e-Government systems and services. They are *Perceived Benefits* (*PB*), *Awareness* (*AW*), *Previous Experience* (*PE*) and *Regulations & Policies* (*RP*). E-Service and e-Transaction providers need to take the importance of these factors into account when implementing e-Government services for the business sector. The results of this chapter provide useful insights into the motivations underlying the intentions to adopt and use e-Government services from the business sector perspective in Saudi Arabia. Based on the findings of this chapter, several recommendations will be provided in the next chapter (Chapter 8).

Chapter Eight: Recommendations and Conclusion

8.1 Introduction

This chapter presents the final conclusions of this research. It provides an overview of the research and summarises all the chapters in Section 8.2, which demonstrates the purpose and outcomes of each chapter, as well as summarizing the research processes and findings. The revised research model is shown in Section 8.3, which also presents the most significant factors that influence adoption and utilisation by all types of users in one combined form, based on the results and findings of this research. The common influential factors that influence the adoption and use of different types of users are also shown. Section 8.4 then provides recommendations from different perspectives based on the findings. The research contributions are presented and discussed in Section 8.5; and this is followed by a brief discussion of the research limitations and directions for future work in Sections 8.6 and 8.7 respectively. Finally, Section 8.8 concludes this chapter with closing remarks.

8.2 Research overview

This section provides an overview of the eight chapters of this thesis and the processes that were undertaken to fulfil the research aims and objectives.

- **Defining the research problem and determining the research objectives and significance**

Chapter 1 introduces the research problem and questions as well as its objectives and scope. It has been identified in the literature that the users' adoption and utilisation of e-Government systems and services is crucial for the success of such demanding and national electronic systems and services. E-Government implementation is in the early stages and the adoption and usage level of its services is still low in many developing countries including Saudi Arabia. There are different factors that influence the adoption and use of technology and electronic systems; however, there is a lack of comprehensive research that analyses and understands the influence of such factors on the intention to adopt and use e-Government services from different users' perspectives; such as government employees and users from business sector. Further, there is a lack of studies that measure the influence of such factors from several aspects. To address these gaps in e-Government adoption literature, a comprehensive framework is required. Thus, the research aimed to develop a conceptual model that determines the drivers of users' intention towards e-Government on one hand, and their relation to the use of e-

government, on the other. The research also aimed to utilise the developed model to analyse and understand the factors' influence on adoption and use from the customers' side (citizens and business sector users) and also from the providers' side (government employees).

- **Developing the research framework and the research hypotheses**

Chapter 2 provides a comprehensive literature review about the background of e-Government, its domains, its maturity levels, its objective and benefits as well as the challenges and barriers to its implementation. It also reviews e-Government implementation in different contexts including developed and developing countries; and provides an overview of the e-Government program in Saudi Arabia, which is the context of this research. Moreover, it defines the adoption and utilisation of e-Government and also reviews the most common theories and models in the literature that aim to understand the acceptance and adoption of technology including the TAM, DOI and UTAUT. Finally, it discusses a number of studies that have been conducted and explored in the e-Government adoption literature. Chapter 2 helps to understand the research context and to achieve the first objective of this research: "*Critically review and investigate the most common models and theories related to the technology acceptance and adoption which are used by many studies in the e-Government literature to assess their applicability for e-Government context*".

In light of Chapter 2, the third chapter develops the research model "E-Government Adoption and Utilisation Model (EGAUM)" which is one of the main contributions of this research. It defines and explains the EGAUM's constructs and also discusses the importance of each proposed factor. Furthermore, Chapter 3 develops the research hypotheses that define the proposed relationships between the EGAUM's factors and the users' adoption and use. This chapter helps to achieve the second objective of this research: *"Developing a more comprehensive model for e-Government adoption and utilisation analysis considering the integration of key constructs from the assessed models and theories"* and to answer the first research question which is:

Question 1: What is the most appropriate theoretical framework that could be used to analyse the adoption and utilisation of e-Government services and systems from the users' perspectives, particularly in Saudi Arabia?

- **Structuring the research methodology and selecting the target samples and data collection techniques**

Chapter 4 describes and justifies the methodology employed in this research to achieve the research objectives and answer its questions. This includes the research philosophy, the research

approach, the research strategy, the research method and the data collection techniques. Practically, this research employs the quantitative dominant mixed method where the quantitative method is used as the main (dominant) method and the qualitative method is used as a supportive and complementary method. This chapter also explains the data collection processes including the research instruments and the sampling method. It also describes the data analysis procedures that involve both a descriptive analysis and a statistical analysis.

- **Findings and discussion from different perspectives**

Chapters 5, 6 and 7 present and discuss the findings and determine the most significant factors from different users' perspectives: citizens, government employees and users from the business sector, respectively. This includes a discussion of the results of the descriptive analysis that validates the research model and provides indications of the impact of each proposed factor; as well as a discussion of results of the statistical analysis which assesses the hypothesized relationships between the proposed factors and the users' intention to use and their perceived readiness of e-Government. Spearman's correlation procedure was utilised to assess these relationships. These chapters also discuss the results of the short semi-structured interviews that were conducted with a number of participants. Chapters 5, 6 and 7 help to achieve the objective of utilising the developed framework to understand and analyse the influence of the proposed factors on the adoption and use of the targeted users. The following research questions were answered as follows:

Question 2: What are the factors that could influence the adoption and use of e-Government services and transactions by citizens in Saudi Arabia?

This question is addressed in Chapter 5. Section 5.2 presents the demographic data of the citizens' sample. Section 5.3 presents the measures for each proposed factor and the results of the descriptive analysis. Section 5.4 statistically assesses the research hypotheses from the citizens' perspective. This chapter reveals that *Education Level, Perceived Benefits (PB), Socio-Cultural (SC), Functional Quality of Services/System (FQS), Perceived Simplicity (PS)* and *Regulations & Policies (RP)* are the most significant factors that influence the adoption and use of citizens.

Question 3: What are the factors that could influence the adoption and use of e-Government services and transactions that are provided to the business sector from the perspectives of this sector's users?

This question is addressed in Chapter 7. The demographic data for the business sector sample is presented in Section 7.2, the factors measured and their descriptive analysis is discussed in

Section 7.3 and the hypotheses assessments are discussed in Section 7.4. This chapter reveals that Ge*nder, Education Level, Perceived Benefits (PB), Awareness (AW), Previous Experience (PE)* and *Regulations & Policies (RP)* are the most significant factors that influence the adoption and utilisation of users from the business sector.

Question 4: What are the factors that influence the adoption and use of government employees when using e-Government systems to process customers' transactions including citizens' transactions and the business sector's transactions?

This question is addressed in Chapter 6. Section 6.2 presents the demographic data for the participating employees. The factors measured from the employees' perspective are presented in Section 6.3 alongside their descriptive analysis. Section 6.4 statistically assesses the hypothesized relationships between the proposed factors and the employees' intention to use. This chapter reveals that *Education Level, Income* (monthly salary), *Perceived Benefits (PB), Socio-Cultural (SC), Awareness (AW), Functional Quality of Services/System (FQS), Perceived Simplicity (PS), Accessibility (ACC), Perceived Trust (PT)* and *Regulations & Policies (RP)* are the most significant factors that influence the adoption and use of government employees.

- **The revised research model, Recommendations, Contributions, Limitations and Future Work**

Having developed and tested the research hypotheses and answered the research questions, this chapter (Chapter 8) develops a number of recommendations based on the results and this answers the following research question.

Question 5: How to enhance and increase the adoption and utilisation level when implementing e-Government systems based on the users' perceptions, attitude, beliefs, needs and choices?

A revised conceptual model that combines the significant factors that influence the adoption and utilisation of citizens, government employees and users from business sector is also presented in this chapter. This revised model was formulated based on the findings of the conducted investigations and analysis in Chapters 5, 6 and 7. Chapter 8 also highlights the contributions of this research alongside with its limitations; and directions for future work are also provided.

8.3 The revised research model

The research model, E-Government Adoption and Utilisation Model (EGAUM), that was proposed in Chapter 3 can be revised based on the findings of this research. The proposed factors in the EGAUM were measured and their relationships with the users' intention to adopt

and use e-Government services and systems were investigated, assessed and analysed from the perspective of different types of users, namely, the citizens, government employees and business sector users. Different analysis procedures were utilised in this research to explore, investigate and assess the influence of the proposed factors on the users' adoption and use including a descriptive analysis, statistical analysis and supportive evidence from the semi-structured interviews that were conducted.

Based on the analyses and findings that were discussed in Chapters 5, 6 and 7, the revised model is developed and presented in Figure 8.1. The revised model demonstrates the most significant factors that impact the adoption and use of different types of users and illustrates the significant relationships between these factors and the users' intention to adopt and use. This revised model can serve as a direct, focused and comprehensive model that represent determinants of higher adoption and use level of e-Government services and systems.

Figure 8.1: The revised research model

The revised combined model shows that there are several common factors that influence different types of users. *Education Level* is one of these common factors that have an impact on the adoption and use of all the targeted groups of users. The impact of this factor is not only

related to the users' academic qualifications, but also their computer literacy and their willingness to learn new things. *Perceived Benefits (PB)* is another common factor that significantly influences the adoption and utilisation of all the targeted types of users. This indicates that to achieve a high level of adoption and use, such e-Government systems and services must be genuinely beneficial for all users and they should feel and experience these benefits. The *Socio-Cultural (SC)* factor is also a common factor that influences the adoption and use of both citizens and government employees. This indicates that several social and cultural aspects such as the influence of others, resistance to change and several other cultural concerns and norms need to be addressed when implementing e-Government systems and services.

The influence of the *Awareness (AW)* factor is significant for both government employees and users from the business sector. Awareness and advertising campaigns as well as training initiatives and courses are fundamental to increasing the awareness of those types of users about the potential and benefits of e-Government and also to train them how to utilise its systems and services. *Functional Quality of Service/System (FQS)* is a common influential factor for the adoption and use of both public employees and citizens. This suggests the significance of the functional aspects that reflect the quality of the implemented systems and services as well as enhancing the users' experience and satisfaction. Another common factor that influences the adoption and use by both citizens and government employees is *Perceived Simplicity (PS)*. The use of e-Government systems and services need to be simple and easy for citizens and government employees, as they are the types of user who are most likely to have different levels of skills in using technology and electronic services. Finally, *Regulation and Policies (RP)* is a common factor that impacts the adoption and use of all the targeted users. This is likely because of the present lack of policies and regulations of e-Use in Saudi Arabia generally, including e-Government use and the use of other electronic and online services. This factor needs to be carefully considered when implementing e-Government systems and services; and clear and concise regulations, policies, conditions and terms of use need to be set up and provided.

8.4 Recommendations

The final objective of this research was to develop a number of recommendations, strategies, guidelines and practical solutions based on the findings for the improvement and success of the provision of e-Government systems and services in developing countries in general and Saudi Arabia in particular, which in turn would encourage different potential users to adopt and use them. Different users' perceptions, attitudes, beliefs, needs and choices were considered when

making these recommendations; although the recommendations generated by this research are mainly aimed at government organisations, e-Services and e-Transactions providers and practitioners in the field of e-Government in order to help them implement more successful e-Government services and systems.

Recommendations for implementing e-Government services and transactions for citizens:

- **Providing effective and beneficial e-Government services and transactions that are completely electronic:**

  Perceived Benefits was one of the most significant factors to influence citizens' intention to adopt and use. Citizens would perceive e-Government services as beneficial and useful if they can help them to access information and conduct the e-Transactions they need. Such effective and beneficial e-Services and e-Transactions need to be completely electronic and provided online so that the customers do not need to visit any government agency. Currently, most of the implemented e-Government services and transactions are partially electronic, where customers conduct part of them online and then need to complete their transactions in person. This issue was also reported by most of the interviewed participants. Moreover, reducing unnecessary procedures, which could delay the completion of e-Transactions, or automating them would speed up the e-Transaction process which then improves the effectiveness of e-Services; and would encourage citizens to adopt and use e-Government services. Furthermore, ensuring that e-Transactions are processed within a reasonable time is crucial; since customers would prefer to conduct government transactions in person for quicker processing. Additionally, such effective and beneficial e-Services need to be available 24 hours and 7 days a week, since this is a very important benefit that enables customers to conduct their transactions at a time convenient to them.

- **Considering the social and cultural aspects when designing and implementing e-Government services:**

  The influence of others and self-image were among the social aspects found to be influential. Several techniques that are widely used in e-Commerce and social networks can be employed to benefit from the impact of these social aspects; such as showing the number of users accessing the same e-Services, the number of users browsing the agency website and also providing a facility to share the e-Services through online social networks. Moreover, the practice of taking advantage of interpersonal relationships and connections (*wasta*) is a negative practice that is sometimes used in the public sector. Such practices can even be used with electronic systems if this is not controlled. The use of this negative

practice can be eliminated and controlled electronically to ensure equal processing for all customers' e-Transactions. Customers can be involved in controlling such negative practice by enabling them to electronically report any use of *wasta*. Facilitating this would also enhance users' perceptions about fair and equal processing in e-Government systems. Additionally, increasing awareness among citizens about the benefits of using e-Government services and transactions by providing more awareness campaigns would help to minimize the impact of face-to-face culture that for decades has characterised the public sector in Saudi Arabia.

- **Ensuring high functional quality of the implemented e-Services and e-Transactions:**

  Different functional aspects that reflect the quality of the implemented e-Government services were found to be significant from the citizens' perspective. The correspondence between customers and government agencies is one of these functional aspects that must be seriously addressed when implementing e-Government systems. It is strongly recommended by this research that the limitations related to the delivery of the required documents need to be effectively addressed and solved if effective and complete e-Government systems are to be implemented. Although the Saudi postal service does provide deliveries, they are still limited and ineffective. Moreover, it is also strongly recommended that different payment options for e-Government services and transactions be provided. Direct payment through the e-Services websites is the most convenient, reliable and effective option that would enhance use. Although the SADAD payment system provides an option for such payments, it is ineffective in terms of saving time and reducing processes that should be a priority in e-Government systems. Additionally, this research recommends implementing several functional features related to the quality of e-Services; such as enabling customers to track their e-Transactions, to view their previous e-Transactions, to evaluate and rate the quality of the provided e-Services and finally communicating with them regarding the status of their e-Transactions by different methods such as email and mobile text messages.

- **Implementing e-Services and e-Transactions that are simple and easy to use:**

  Citizens have different computer skills and different abilities in terms of using technologies. One of the recommendations of this research is to implement simple and easy to use e-Services. This can be achieved by making them easily accessible through the providers' websites. Moreover, providing clear and simple explanations about the e-Service in question, the steps required to access and use it, and how it will be processed can make such e-Services easy and seamless. Additionally, providing illustrative texts and images of the required documents and information can significantly enhance simplicity and reduce

ambiguity. Further, providing videos to explain the intended e-Service and how it can be used would also enhance simplicity of use.

- **Reliability enhancement:**

  Implementing and applying regulations, rules and policies properly are very important to citizens. This includes information security policies, information privacy policies and the regulations for using e-Government. Proper implementation means making them clear, strict, applicable to all parties (users, employees and agencies), accessible, comprehensive and visible. The regulation and policies involved in online dealings are usually long and complicated; thus, providing them in a concise, simple, short and understandable way would increase the probability of users reading them and thus, increase the trust, confidence and intention to use. This is particularly the case when providing online services to the public where there are different levels of education, different attitudes, different perceptions and different online use behaviour.

- **Enhancing digital literacy:**

  The research found differences amongst citizens with different education levels in terms of intention to use e-Government systems and services. Therefore, the researcher recommends improving digital awareness amongst the potential public users. This can be achieved through learning and training environments. Providing awareness, learning and training campaigns for the public would generally reduce digital illiteracy in society in general and for the elderly in particular. These campaigns can be provided in public areas such as community centres. Authorized offices to help the public to use e-Services and e-Transactions could be located in public places such as shopping centres or even dedicated departments in government agencies and would enhance digital literacy at least in the early stages of implementing e-Government.

- **Improving the accessibility options for the implemented e-Services and e-Transactions:**

  This can be achieved by implementing functional applications that enable customers to perform e-Services and e-Transactions on the go through Smart phones and tablets. Offering reliable and fast Internet connections, either free or at low cost, in public areas would significantly contribute to the spread and use of e-Government services. Additionally, providing electronic machines in public areas such as shopping centres and airports would also contribute to increase the adoption and use of e-Government services.

- **Increasing awareness about the implemented e-Services and their benefits:**

  This can be achieved by advertising the implemented e-Services through social networks, TV channels, radio channels and text messages which are the most powerful methods of influencing Saudi citizens. Advertising new related e-Services when users conduct their e-Transactions is also a useful technique.

- **Implementing a one-stop-shop e-Government portal:**

  The researcher recommends that this needs to be seriously considered when implementing e-Government. A single-sign portal that provides different e-Services and e-Transactions from different government agencies is a way of making use easier and enhancing accessibility and controllability for all users, including citizens and the business sector. This single-sign portal is meant to provide actual and complete e-Services, not just a means of navigating users to the agencies' websites.

Recommendations for implementing e-Government services and transactions for the business sector:

- **Providing integrated e-Services and e-Transactions that are completely electronic:**

  Since the private sector (business sector) normally conducts a large volume of government transactions; such transactions should be completely electronic where users do not need to visit any government agency to complete them. This would benefit the business sector and also would offer more job opportunities, especially for females who would find some difficulties in conducting certain government transactions, which require a personal visit to achieve completion. This is difficult for females due to lack of public transport and the unavailability of female sections in some agencies. If these visits were not required, companies may be more willing to employ women who could then conduct transactions online.

- **Enhancing the digital literacy of users in the business sector:**

  This can be achieved by providing training for business owners and related employees in the business sector. It can also be achieved by setting up regulations on how companies train their employees in cooperation with e-Services providers.

- **Disseminating the benefits and advantages of using e-Government systems for business sector:**

  Government organisations should play a proactive role in popularizing the benefits of online government e-Services to the business sector by offering workshops and visual presentations about the potential of the e-Government systems and services that are implemented for the business sector.

- **Using e-Government systems to offer investment and commercial opportunities for the private sector:**

  This includes government procurement and tenders; and would increase the commercial activities for the private sector and facilitate control of the public procurement and tenders.

- **Conducting periodic surveys to assess the implemented e-Services and gain feedback from business sector users:**

  This is recommended as a way to improve the e-Services provided for the business sector and to increase the positive perception about e-Government systems. This is important as initial use and previous experience have a significant impact on the adoption and use by business sector users.

- **Applying clear, strict and comprehensive regulations and policies that are related to e-Government use:**

  This is strongly recommended as the business sector conducts large numbers of government transactions that involve sensitive data. These regulations and policies include information security policies and information privacy policies. They also include rules and laws that reserve users' and agencies' rights as well as regulating any conflicts and regulation violation cases.

Recommendations for government agencies to increase adoption and enhance the use by government employees:

- **Increasing awareness among public employees about the potential and advantages of implementing e-Government systems:**

  This is strongly recommended for public sector employees, as a high level of awareness would contribute to overcoming barriers such as technology resistance, concerns about unemployment and job loss and a preference for traditional dealings. It would also enhance

employees' perceived trust and confidence when using electronic systems for customers' transactions. Awareness campaigns need to take socio-cultural factors, trust levels and employees concerns into account and not just focus on making users aware of e-Government potential.

- **Providing sufficient and comprehensive training:**

  Ideally this should be done in the preparation phase before implementing any e-Government system or service, as well as after implementation if any updates and changes are applied. Training is important not only to train employees on how to use, but also to increase their awareness about the potential, abilities and advantages of e-Government systems.

- **Reconsidering the computer use bonus for public sector employees:**

  This can be employed like an overtime bonus to encourage employees to use electronic systems to process more transactions out of working hours. Eligibility for receiving this bonus also needs to be reconsidered.

- **Creating a digital work environment:**

  This would encourage transfer to digital dealings and communications. A digital work environment can be created by automating tasks and making them electronic. These tasks include correspondence between employees or departments within the same organisation or with other government organisations. Implementing internal electronic systems enable employees to conduct transactions related to their jobs; such as applying for leave or compensation and reviewing personal employment profiles is also a form of digital work environment.

- **Implementing easy-to-use electronic systems:**

  The electronic systems that the employees use to process customers' transactions need to be easy-to-use, clearly explained and free from technical and functional errors. This can be achieved by providing illustrative examples of e-Transactions and their requirements, an electronic manual showing steps in processing and procedures and giving alerts and confirmation messages. A help desk that is dedicated to helping employees to use e-Government and which solves technical and functional errors immediately is also recommended.

- **Enhancing the electronic collaboration between different departments and organisations:**

  This research strongly recommends encouraging government organisations to adopt electronic systems and collaborate with other organisations. This would significantly improve communications between different government organisations in terms of exchanging knowledge, data and customers' transactions.

- **Engaging employees in the design, implementation and updating of e-Government systems:**

  This would improve e-Government as a whole as well as the electronic systems that employees use to process customers' transactions and the e-Services and e-Transactions that are provided to the customers.

- **Updating and improving the ICT infrastructure in the public sector:**

  This includes providing efficient technologies, sophisticated computers and secure networks.

- **Providing clear and comprehensive regulations and policies for employees' use of e-Government systems:**

  This includes information privacy policies, information security policies as well as rules, conditions and terms of use. Such regulations and policies need to be clear and comprehensive to increase the employees' confidence and trust in using such systems. This research also recommends providing regulations related to reserving employees' rights in case of conflicts, mistakes, and unexpected outcomes; and also for allocating bonuses.

8.5 The research contributions

This section presents the novel contributions that this research makes to theory, practice and methodology in the field of e-Government adoption and utilisation.

8.5.1 Theoretical contributions

This research makes a number of contributions to the theory. **Firstly**, this research provides a comprehensive and critical review of e-Government literature that involves several aspects such as e-Government background, its domains, its maturity levels, its benefits and its challenges. This necessitated reviewing e-Government implementation in different countries to have a better understanding and wider picture of how this is done in different contexts, especially in the

countries neighbouring Saudi Arabia. A critical review of several theories and models related to technology acceptance and diffusion in the literature was also conducted. This contribution benefits both researchers and practitioners in the field of e-Government adoption and utilisation.

Secondly, this research developed a novel and integrated conceptual framework, which is the E-Government Adoption and Utilisation Model (EGAUM), for analysing the adoption and use of e-Government systems and services. The developing process for this framework included an evaluation of a number of theories and models in technology acceptance and use literature such as the TAM, DOI and UTAUT and an assessment of their applicability to analyse e-Government adoption and use. It also included an investigation of several studies from the e-Government adoption literature. The research then identified critical factors that influence the adoption and use of e-Government systems and services; and the factors identified were categorized to form the research framework. This is one of the main contributions of this research to knowledge as the EGAUM provides an insight into a number of crucial factors and determinants of higher adoption and use level.

A number of constructs involved in several technology acceptance models were shown to be significant; and merged to form the model proposed in this research, but from a wider point of view. For example, *Perceived Benefits* (*PB*) in the EGAUM is analogous to Perceived Usefulness in the TAM and Relative Advantage in the DOI; but has a broader scope and context-specific considerations that are related to an e-Government context. Moreover, *Socio-Cultural* (*SC*) in the EGAUM is from the same domain as Subjective Norms in the TAM and Social Influence in the UTAUT; but again has a more comprehensive view, as both the TAM and the UTAUT only address the influence of others as an aspect of social influence.

Other significant constructs that are crucial to users' adoption and intention to use were also not addressed in the technology acceptance literature; thus, they were proposed in the EGAUM. For example, the influence of *Functional and Technical Quality of Services* (*FQS*) and (*TQS*) was not addressed in either of the aforementioned commonly-used models or theories or in the many e-Government adoption studies, despite its importance. Similarly, the impact of *Perceived Trust* (PT*)* was also absent from the many studies that have utilised technology acceptance models. Other factors such as *Awareness* (*AW*), *Previous Experience* (*PE*) and *Regulations and Policies* (*RP*) were proposed as influential factors in the EGAUM as they have not been fully considered in the e-Government adoption and implementation literature.

Thirdly, the developed framework was empirically validated in this research. This was achieved by analysing primary data collected from different types of users; namely, citizens, government employees and users from the business sector and from different places in Saudi

Arabia. This is another fundamental contribution by this research, since no studies were found in the literature, especially in regarding Arab countries, that explored and analysed the adoption and use of e-Government from different users' perspectives particularly business sector users and public employees.

8.5.2 Practical implications

Based on practical evidence, the research findings revealed the most significant factors that influence the adoption and use for each type of user (citizens, government employees and users from business sector) and developed a revised, focused and comprehensive model that comprises these significant factors. This represents four main practical contributions of this research; each of which can be summarized as follows:

- The research found that *Education level, Perceived Benefits, Socio-Cultural, Functional Quality of Services/Systems, Perceived Simplicity* and *Regulations & Policies* are the most significant factors that influence the citizens' adoption and use of e-Government services and systems.

- The research also found that *Gender, Education level, Perceived Benefits, Awareness, Previous Experience* and *Regulations & Policies* are the most significant factors that influence the adoption and use of users from business sector.

- The research found that *Educations Level, Income* (monthly salary), *Perceived Benefits, Socio-Cultural, Awareness, Functional Quality of Services/Systems, Perceived Simplicity, Accessibility, Perceived Trust* and *Regulations & Policies* are the most significant factors that influence the public employees' adoption and use of e-Government systems.

- The revised model presented in Section 8.3 in this chapter can be utilised by practitioners, e-Services providers, government organisations and researchers to understand the adoption and utilisation of users. Furthermore, it can also be utilised in different contexts that have similarities with Saudi Arabia in terms of culture, infrastructure, environment and e-Government maturity level as a direct and focused model for analysing and understanding users' adoption and use.

The research also collected and analysed qualitative data to have better understanding and provide more evidence about the influence of the proposed factors. This is another contribution that this research provides. Furthermore, the research provides a number of recommendations for government organisations, e-Services and e-Transactions providers and practitioners in the field of e-Government which can be used as guidelines to design, implement and provide more

successful e-Government services and systems based on the users' perceptions and needs to achieve higher adoption and use level. This is also another main practical contribution of this research.

8.5.3 Methodological contributions

This research provides a number of methodological contributions that can contribute to research design for future research in IS and the field of interactive systems adoption. These methodological contributions reflect positively on this research, its findings, reliability and validity. **Firstly**, this research collected primary data from different places and different cities in Saudi Arabia. This contribution supports the generalisability of the findings of this research. **Secondly,** and unlike much research in the literature, this is one of the few studies (particularly in Arab countries) that collected data from actual and potential users of e-Government systems and services. The use of 'in person' data collection was a useful technique that helped to reach to the targeted and intended participants including citizens, public employees and users from the business sector. The most dominant technique of data collection in the e-Government literature is online data collection, which only targets Internet users, and the use of student participants, which can limit the findings to a specific group.

Thirdly, this research utilised the triangulation data collection approach that involved quantitative data to validate the proposed framework, to assess the research hypotheses and to investigate the influential factors. The triangulation approach also involved qualitative data that supported the findings as well as exploring other aspects of the influential factors. **Fourthly**, the design of research instruments that have been used to collect data is another methodological contribution of this research. This includes the way of asking the questions, the variation in the answer options and the questionnaires' appearance and design. Although they were relatively long due to the number of measuring items, some participants commented positively on their design. One of them said, *"...it is a well-structured and clear questionnaire, it is rare to find such a one"*. Another said, *"...the use of highlighting and grouping the questions did not make me feel that it was long, this is a professional method"*. **Fifthly**, most of the measuring items that have been developed and used in this research are stand-alone items that measure different important aspects of the intended factor; unlike many other studies in the literature that produce a number of items that measure the same aspect. This contributes positively to the exploration and understanding of the influence of each proposed factor.

8.6 Research Limitations

This research achieved its objectives and answered the main research questions. However, there are some limitations in this research which can serve as opportunities for future research. These limitations can be summarized as follows:

- **Lack of literature in e-Government adoption and utilisation analysis in the developing countries particularly from the perspectives of business sector and public employees:**

  Owning to this lack, there were some difficulties when comparing the findings of this research with other similar research.

- **The issue of distance**:

  The data collection involved travelling to Saudi Arabia to collect data from the targeted participants. This forced the researcher to gather quantitative and qualitative data within a limited time (parallel approach), knowing that it would be difficult to meet the respondents again once the researcher had travelled back to the UK. This limitation prevented the statistical exploration and investigation of the influence of location on the users' adoption and use. Although the participants who were interviewed did comment on location as a factor, this was not sufficient to fully assess the impact of this factor. Their comments however highlighted that it needs further investigation.

- **The issue of gender:**

  Due to the fact that Saudi Arabia is a conservative nation and because of certain cultural and religious reasons, the samples in this research are biased in favour of male over female. This limitation prevents the research from statistically exploring and investigating the influence of gender, especially in the government employees' sample. However, the research samples are still representative and this is justified (see Sections 5.2, 6.2 and 7.2 in Chapters 5, 6 and 7). Nevertheless, it is difficult to generalise the findings of this research to potential female users. This limitation was expected as it is also reported in several studies conducted in a similar context (Alshihi, 2006; Alsaif, 2013; Rehman et al., 2012).

- **The size of the business sector sample:**

  Due to time limits for data collection in this research and the distance limitation, it was difficult to collect data from more users from the business sector due to the busy nature of the targeted group and difficulties in finding appropriate participants. However, the findings from this sample provide useful insights into the motivations underlying the intentions to adopt and use e-Government services from the business sector perspective.

8.7 Opportunities for future work

E-Government implementation is still in its early stages in many developing countries and the adoption and utilisation of its systems and services is a relatively new topic. Thus, many areas are still need to be studied and future work should expand the knowledge and understanding of e-Government beyond the scope of this research. There are some areas that are related to this research theme that require further research work and investigation. These include:

- Analysing the influence of the proposed factors, utilising EGAUM, from the female perspective in Saudi Arabia. Although most government transactions are performed mainly by males, the number of female employees and users are expected to rise in the coming years. Female researchers should ideally conduct such research work.

- Employing the findings of this research by considering the most influential factors and designing e-Services that consider the aspects that are involved in each factor. This would help to assess and confirm their influence practically.

- Utilising the E-Government Adoption and Utilisation model (EGAUM) to understand adoption and utilisation in different contexts. This could include different developing countries as well as developed countries; and would extend the generalisability and contribution of the developed framework.

- The research model can also be adapted to study the adoption and utilisation of different interactive systems such as e-Commerce and e-Business, online banking and e-Learning systems.

- The current research utilised a multiple method approach, namely the quantitative dominant mixed method (quantitative method as the main method and the qualitative method as a supportive and complementary method). Future work could utilise an in-depth qualitative approach to deepen the knowledge and understanding the influential factors. The EGAUM can be used as a comprehensive framework for such research work.

- Exploring the indirect relationships between the influential factors and assessing the impacts amongst them is also another future work direction to better understand the users' adoption and use.

8.8 Closing remarks

This chapter has provided an overview of the research, demonstrated its major contributions, developed recommendations based on its findings, summarized its limitations and provided directions for future work.

This research has attempted to fill the knowledge gap by developing an integrated and comprehensive framework that identifies salient factors influencing the adoption and utilisation of e-Government systems and services. It has then utilised the developed framework to investigate and understand the adoption and use from different perspectives, namely, citizens, users from the business sector and government employees. The novelty of the utilised framework, the measured aspects and the methodology of data collection and analysis has given this research an advantage over other studies in the literature. The outcomes of this research are aimed at planning, designing and implementing e-Government systems and services more effectively, based on users' expectations, needs, perceptions, beliefs and other aspects that influence their willingness and intention to use. It is also hoped they can assist e-government practitioners to determine which aspects to focus on in order to increase adoption and use rate of e-government.

Last but not least, this research is submitted in the hope that it has contributed to the knowledge and literature on IS and interactive systems in general and on e-Government in particular. Further, it is hoped that e-Services and e-Transactions providers, government agencies, practitioners and researchers in the field of e-Government will find it an invaluable resource.

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Appendix A: Raw data of the citizens' sample

Table 1: Raw data of PB items

Perceived Benefit items	Measure	Strongly agree	Agree	Don't know or neutral	Disagree	Strongly disagree	Mean	Std. Deviation	Result
PB1	Freq.	349	57	6	3	1	1.19	0.50	Strongly agree
	Percent	83.9	13.7	1.4	0.7	0.2			
PB2	Freq.	337	68	8	2	1	1.22	0.52	Strongly agree
	Percent	81	16.3	1.9	0.5	0.2			
PB3	Freq.	344	56	12	3	1	1.22	0.55	Strongly agree
	Percent	82.7	13.5	2.9	0.7	0.2			
PB4	Freq.	314	78	15	5	4	1.33	0.69	Strongly agree
	Percent	75.5	18.8	3.6	1.2	1			
PB5	Freq.	329	64	17	3	3	1.28	0.64	Strongly agree
	Percent	79.1	15.4	4.1	0.7	0.7			
PB6	Freq.	311	72	25	7	1	1.35	0.69	Strongly agree
	Percent	74.8	17.3	6	1.7	0.2			
PB7	Freq.	349	50	12	4	1	1.21	0.56	Strongly agree
	Percent	83.9	12	2.9	1	0.2			
Total	Freq.	2333	445	95	27	12	1.26	0.47	Strongly agree
	Percent	80.12	15.28	3.25	0.92	0.38			

Table 2: Raw data of SC items

Socio-Cultural items	Measure	Strongly agree	Agree	Don't know or neutral	Disagree	Strongly disagree	Mean	Std. Deviation	Result
SC1	Freq.	230	112	43	22	9	1.72	0.99	Strongly agree
	Percent	55.3	26.9	10.3	5.3	2.2			
SC2	Freq.	250	131	29	4	2	1.5	0.71	Strongly agree
	Percent	60.1	31.5	7	1	0.5			
SC3	Freq.	273	82	36	18	7	1.56	0.93	Strongly agree
	Percent	65.6	19.7	8.7	4.3	1.7			
SC4 (reversed)	Freq.	150	104	56	46	60	2.42 (3.57)*	1.43	Agree
	Percent	36.1	25	13.5	11.1	14.4			
SC5	Freq.	260	115	29	8	4	1.5	0.78	Strongly agree
	Percent	62.5	27.6	7	1.9	1			
SC6 (reversed)	Freq.	185	112	46	41	32	2.09 (3.9)*	1.27	Agree
	Percent	44.5	26.9	11.1	9.9	7.7			
SC7 (reversed)	Freq.	243	83	40	29	21	1.8 (4.19)*	1.17	Agree
	Percent	58	20	9.6	7	5			
Total	Freq.	1591	739	279	168	135	1.8	0.59	Agree*
	Percent	54.6	25.4	9.6	5.8	4.6			

* The mean without reversing

Table 3: Raw data of AW part1 items

Awareness items	Measure	Strongly agree	Agree	Don't know or neutral	Disagree	Strongly disagree	Mean	Std. deviation	Result
AW1	Freq.	113	175	90	31	7	2.14	0.95	Agree
	Percent	27.2	42.1	21.6	7.5	1.7			
AW2	Freq.	84	156	105	49	22	2.44	1.09	Agree
	Percent	20.2	37.5	25.2	11.8	5.3			
AW3	Freq.	124	155	90	34	13	2.17	1.04	Agree
	Percent	29.8	37.3	21.6	8.2	3.1			
AW4	Freq.	65	103	113	94	41	2.8	1.21	Neutral or do not know
	Percent	15.6	24.8	27.2	22.6	9.9			
Total	Freq.	386	589	398	208	83	2.4	0.7	Agree
	Percent	23.1	35.4	23.9	12.5	20			

Table 4: Raw data of AW part2 items

Awareness items	Measure	Very influential	Influential to some extent	Don't know	Uninfluential to some extent	Very uninfluential	Mean	Std. Deviation	Result
AW5	Freq.	159	153	48	36	20	2.05	1.13	Influential to some extent
	Percent	38.2	36.8	11.5	8.7	4.8			
AW6	Freq.	102	172	80	39	23	1.30	1.10	Very influential
	Percent	14.5	41.3	19.2	9.4	5.5			
AW7	Freq.	93	171	77	40	35	2.40	1.17	Influential to some extent
	Percent	22.4	41.1	18.5	9.6	8.4			
AW8	Freq.	151	146	63	28	28	2.12	1.17	Influential to some extent
	Percent	36.3	35.1	15.1	6.7	6.7			
AW9	Freq.	142	179	50	24	21	2.04	1.07	Influential to some extent
	Percent	34.1	43	12	5.8	5			
AW10	Freq.	156	156	43	36	25	2.08	1.16	Influential to some extent
	Percent	37.5	37.5	10.3	8.7	6			
Total	Freq.	803	977	361	203	152	2.1	0.88	Influential to some extent
	Percent	30.5	39.1	14.4	8.1	6.1			

Table 5: Raw data of FQS part1 items

FQS part1 items	Measure	Strongly agree	Agree	Don't know or neutral	Disagree	Strongly disagree	Mean	Std. deviation	Result
FQS1	Freq.	37	151	108	101	19	2.79	1.05	Neutral or do not know
	Percent	8.9	36.3	26	24.3	4.6			
FQS2	Freq.	41	86	134	90	65	3.12	1.19	Neutral or do not know
	Percent	9.9	20.7	32.2	21.6	15.6			
FQS3	Freq.	144	166	59	41	6	2.03	1.00	Agree
	Percent	34.6	39.9	14.2	9.9	1.4			
Total	Freq.	222	403	301	232	90	2.65	0.79	Neutral or do not know
	Percent	17.8	32.3	24.1	18.6	7.2			

Table 6: Raw data of FQS part2 items

FQS part2 items	Measure	Very high importance	High importance	Medium importance	Low importance	Very low importance	Mean	Std. Deviation	Result
FQS4	Freq.	315	67	27	7	0	1.34	0.67	Very high importance
	Percent	75.7	16.1	6.5	1.7	0			
FQS5	Freq.	225	98	52	8	3	1.57	0.83	Very high importance
	Percent	61.3	23.6	12.5	1.9	0.7			
FQS6	Freq.	231	111	63	5	6	1.66	0.87	Very high importance
	Percent	55.5	26.7	15.1	1.2	1.4			
FQS7	Freq.	285	70	42	12	7	1.52	0.91	Very high importance
	Percent	68.5	16.8	10.1	2.9	1.7			
Total	Freq.	1173	444	280	67	26	1.52	0.68	Very high importance
	Percent	60.7	21.3	13.4	3.2	1.2			

Table 7: Raw data of PE1 item

Previous experience items	Measure	Very satisfactory	Satisfactory to some extent	Not satisfactory	Median	IQR	Result
PE1	Freq.*	162	212	17	2	1, 2	Satisfactory to some extent
	Percent*	41.4	54.2	4.3			

*25 cases not included

Table 8: Raw data of PE2 item

Previous experience items	Measure	Encourage me to use it more	Make me hesitate to use it	No effect	Median	IQR	Result
PE2	Freq.*	290	41	60	1	1, 2	Encourage me to use it more
	Percent*	74.2	10.5	15.3			

* 25 cases not included

Table 9: Raw data of PE3 item

Previous experience items	Measure	Very satisfactory	Satisfactory to some extent	Not satisfactory	Median	IQR	Result
PE3	Freq.*	244	113	3	1	1, 2	Very satisfactory
	Percent*	67.8	31.4	0.8			

*56 cases not included

Table 10: Raw data of PE4 item

Previous experience items	Measure	Encourage me to use EGOV	Make me hesitant to use EGOV	No effect	Median	IQR	Result
PE4	Freq.*	234	10	116	1	1, 3	Encourage me to use EGOV
	Percent*	65	2.8	32.2			

*56 cases not included

Table 11: Raw data of PS part1 items

PS part1 items	Measure	Strongly agree	Agree	Don't know or neutral	Disagree	Strongly disagree	Mean	Std. deviation	Result
PS1	Freq.	183	179	36	17	1	1.73	0.80	Strongly agree
	Percent	44	43	8.7	4.1	0.2			
PS2	Freq.	55	158	84	91	28	2.70	1.14	Neutral or do not know
	Percent	13.2	38	20.2	21.9	6.7			
PS3	Freq.	205	169	32	10	0	1.63	0.72	Strongly agree
	Percent	49.3	40.6	7.7	2.4	0			
Total	Freq.	443	506	152	118	29	2.02	0.56	Agree
	Percent	35.5	40.5	12.2	9.4	2.3			

PS part2 items	Measure	Very high importance	High importance	Medium importance	Low importance	Very low importance	Mean	Std. Deviation	Result
PS4	Freq.	284	82	45	4	1	1.45	0.74	Very high importance
	Percent	68.3	19.7	10.8	1	0.2			
PS5	Freq.	247	102	56	8	3	1.60	0.84	Very high importance
	Percent	59.4	24.5	13.5	1.9	0.7			
PS6	Freq.	259	95	50	11	1	1.55	0.82	Very high importance
	Percent	62.3	22.8	12	2.6	0.2			
Total	Freq.	790	279	151	23	5	1.53	0.71	Very high importance
	Percent	63.3	22.3	12.1	1.8	0.3			

Table 12: Raw data of PS part2 items

Table 13: TQS part1 items

TQS part1 items	Measure	Strongly agree	Agree	Don't know or neutral	Disagree	Strongly disagree	Mean	Std. deviation	Result
TQS1	Freq.	101	162	69	58	26	2.38	1.17	Agree
	Percent	24.3	38.9	16.6	13.9	6.3			
TQS2	Freq.	95	147	84	61	29	2.47	1.19	Agree
	Percent	22.8	35.3	20.2	14.7	7			
Total	Freq.	196	309	153	119	55	2.43	0.92	Agree
	Percent	23.5	37.1	18.4	14.3	6.6			

Table 14: Raw data of TQS part2 items

TQS part2 items	Measure	Very high importance	High importance	Medium importance	Low importance	Very low importance	Mean	Std. Deviation	Result
TQS3	Freq.	248	87	58	18	5	1.66	0.95	Very high importance
	Percent	59.6	20.9	13.9	4.3	1.2			
TQS4	Freq.	209	103	77	23	4	1.82	0.98	High importance
	Percent	50.2	24.8	18.5	5.5	1			
TQS5	Freq.	184	124	69	23	16	1.94	1.08	High importance
	Percent	44.2	29.8	16.6	5.5	3.8			
TQS6	Freq.	125	91	117	60	23	2.43	1.21	High importance
	Percent	30	21.9	28.1	14.4	5.5			
Total	Freq.	766	405	321	124	48	1.96	0.82	High importance
	Percent	46	24.3	19.2	7.4	5.1			

Table 15: Raw data of ACC part1 items

ACC part1 items	Measure	Strongly agree	Agree	Don't know or neutral	Disagree	Strongly disagree	Mean	Std. deviation	Result
ACC1	Freq.	208	127	44	27	10	1.80	1.02	Agree
	Percent	50	30.5	10.6	6.5	2.4			
ACC2	Freq.	255	92	41	21	7	1.63	0.96	Strongly agree
	Percent	61.3	22.1	9.9	5	1.7			
Total	Freq.	463	219	85	48	17	1.72	0.72	Strongly agree
	Percent	55.6	26.3	10.2	5.7	2.05			

Table 16: Raw data of ACC part2 items

ACC part2 items	Measure	Very high importance	High importance	Medium importance	Low importance	Very low importance	Mean	Std. Deviation	Result
ACC3	Freq.	184	124	69	23	16	1.94	1.08	High importance
	Percent	44.2	29.8	16.6	5.5	3.8			
ACC4	Freq.	226	106	61	15	8	1.73	0.96	Very high importance
	Percent	54.3	25.5	14.7	3.6	1.9			
ACC5	Freq.	248	93	60	12	3	1.62	0.88	Very high importance
	Percent	59.6	22.4	14.4	2.9	0.7			
Total	Freq.	658	323	190	50	27	1.77	0.77	Very high importance
	Percent	52.7	25.9	15.2	4	2.1			

Table 17: Raw data of PT items

Perceived Trust items	Measure	Strongly agree	Agree	Don't know or neutral	Disagree	Strongly disagree	Mean	Std. Deviation	Result
PT1 (reversed)	Freq.	104	138	80	61	33	2.47 (3.52)*	1.23	Agree
	Percent	25	33.2	19.2	14.7	7.9			
PT2	Freq.	146	174	67	23	6	1.96	0.92	Agree
	Percent	35.1	41.8	16.1	5.5	1.4			
PT3 (reversed)	Freq.	37	68	74	133	104	3.47 (2.52)*	1.27	Disagree
	Percent	8.9	16.3	17.8	32	25			
PT4 (reversed)	Freq.	66	125	76	103	46	2.85 (3.14)*	1.26	Neutral or do not know
	Percent	15.9	30	18.3	24.8	11.1			
PT5 (reversed)	Freq.	220	72	53	45	26	2.00 (3.99)*	1.28	Agree
	Percent	52.9	17.3	12.7	10.8	6.3			
PT6 (reversed)	Freq.	49	80	134	97	56	3.07 (2.92)*	1.19	Neutral or do not know
	Percent	11.8	19.2	32.2	23.3	13.5			
PT7	Freq.	116	177	88	29	6	2.11	0.94	Agree
	Percent	27.9	42.5	21.2	7	1.4			
Total	Freq.	738	834	572	491	187	2.56	0.66	Agree
	Percent	25.3	28.6	19.6	16.8	66.6			

* The mean without reversing

Table 18: Raw data of RP items

Regulations and Policies items	Measure	Very high importance	High importance	Medium importance	Low importance	Very low importance	Mean	Std. Deviation	Result
RP1	Freq.	229	101	61	16	9	1.73	0.98	Very high importance
	Percent	55	24.3	14.7	3.8	2.2			
RP2	Freq.	249	95	50	15	7	1.64	0.94	Very high importance
	Percent	59.9	22.8	12	3.6	1.7			
RP3	Freq.	258	88	52	10	8	1.61	0.92	Very high importance
	Percent	62	21.2	12.5	2.4	1.9			
Total	Freq.	736	284	163	41	24	1.66	0.88	Very high importance
	Percent	58.9	22.7	13	3.2	1.9			

Table 19: Raw data of ITU items

ITU items	Measure	Strongly agree	Agree	Don't know or neutral	Disagree	Strongly disagree	Mean	Std. deviation	Result
ITU1	Freq.	343	57	10	4	2	1.23	0.58	Strongly agree
	Percent	82.5	13.7	2.4	1	0.5			
ITU3	Freq.	307	88	16	2	3	1.33	0.644	Strongly agree
	Percent	73.8	21.2	3.8	0.5	0.7			
Total	Freq.	816	249	83	66	34	1.28	0.52	Strongly agree
	Percent	65.4	19.6	6.6	5.3	2.7			

Table 20: Raw data of PER items

PER items	Measure	Strongly agree	Agree	Don't know or neutral	Disagree	Strongly disagree	Mean	Std. deviation	Result
PER1	Freq.	90	134	99	58	35	2.55	1.21	Agree
	Percent	21.6	32.2	23.8	13.9	8.4			
PER2	Freq.	82	144	81	79	30	2.59	1.20	Agree
	Percent	19.7	34.6	19.5	19	7.2			
Total	Freq.	172	278	180	137	65	2.57	1.04	Agree
	Percent	20.6	33.4	21.6	16.45	7.8			

Appendix B: Raw data of the public employees' sample

Table 21: Raw data of PB items

Perceived Benefit items	Measure	Strongly agree	Agree	Don't know or neutral	Disagree	Strongly disagree	Mean	Std. Deviation	Result
PB1	Freq.	248	56	4	3	0	1.23	0.51	Strongly agree
	Percent	79.7	18	1.3	1	0			
PB2	Freq.	201	96	12	2	0	1.40	0.59	Strongly agree
	Percent	64.6	30.9	3.9	0.6	0			
PB3	Freq.	155	104	38	13	1	1.71	0.85	Strongly agree
	Percent	49.8	33.4	12.2	4.2	0.3			
PB4	Freq.	167	115	26	2	1	1.56	0.70	Strongly agree
	Percent	53.7	37	8.4	0.6	0.3			
PB5	Freq.	252	56	1	1	1	1.20	0.47	Strongly agree
	Percent	81	18	0.3	0.3	0.3			
Total	Freq.	1023	427	81	21	3	1.42	0.47	Strongly agree
	Percent	65.7	27.4	5.2	1.3	0.18			

Table 22: Raw data of SC items

Socio-Cultural items	Measure	Strongly agree	Agree	Don't know or neutral	Disagree	Strongly disagree	Mean	Std. Deviation	Result
SC1	Freq.	206	96	5	3	1	1.38	0.60	Strongly agree
	Percent	66.2	30.9	1.6	1	0.3			
SC2	Freq.	129	112	52	16	2	1.87	0.91	Agree
	Percent	41.5	36	16.7	5.1	0.6			
SC3	Freq.	160	130	13	7	1	1.58	0.70	Strongly agree
	Percent	51.4	41.8	4.2	2.3	0.3			
SC4 (reversed)	Freq.	77	127	46	31	30	2.38 (3.61)*	1.23	Agree
	Percent	24.8	40.8	14.8	10	9.6			
SC5 (reversed)	Freq.	26	58	68	96	63	3.36 (2.63)*	1.23	Don't know or neutral
	Percent	8.4	18.6	21.9	30.9	20.3			
SC6 (reversed)	Freq.	67	136	63	30	15	2.32 (3.67)*	1.06	Agree
	Percent	21.5	43.7	20.3	9.6	4.8			
SC7 (reversed)	Freq.	92	133	42	36	8	2.14 (3.85)*	1.05	Agree
	Percent	29.6	42.8	13.5	11.6	2.6			
SC8 (reversed)	Freq.	53	119	67	60	12	2.54 (3.45)*	1.09	Agree
	Percent	17	38.3	21.5	19.3	3.9			
SC9 (reversed)	Freq.	59	132	53	48	19	2.47 (3.52)*	1.14	Agree
	Percent	19	42.4	17	15.4	6.1			
Total	Freq.	869	1043	409	327	151	2.23	0.53	Agree
	Percent	31	38	14.6	11.6	5.3			

* The mean without reversing

Table 23: Raw data of AW items

Awareness items	Measure	Strongly agree	Agree	Don't know or neutral	Disagree	Strongly disagree	Mean	Std. Deviation	Result
AW1	Freq.	123	162	21	4	1	1.70	0.67	Strongly agree
	Percent	39.5	52.1	6.8	1.3	0.3			
AW2	Freq.	128	141	22	16	4	1.80	0.87	Agree
	Percent	41.2	45.3	7.1	5.1	1.3			
AW3	Freq.	150	124	14	15	8	1.73	0.94	Strongly agree
	Percent	48.2	39.9	4.5	4.8	2.6			
Total	Freq.	401	427	57	35	13	1.74	0.62	Strongly agree
	Percent	42.9	45.7	6.1	3.7	1.4			

Table 24: Raw data of FQS items

Functional Quality of Service items	Measure	Strongly agree	Agree	Don't know or neutral	Disagree	Strongly disagree	Mean	Std. Deviation	Result
FQS1	Freq.	93	158	37	21	2	1.97	0.86	Agree
	Percent	29.9	50.8	11.9	6.8	0.6			
FQS2	Freq.	150	140	14	7	0	1.60	0.68	Strongly agree
	Percent	48.2	45	4.5	2.3	0			
FQS3	Freq.	131	140	18	19	3	1.78	0.87	Strongly agree
	Percent	42.1	45	5.8	6.1	1			
FQS4	Freq.	40	79	111	50	31	2.84	1.14	Don't know or neutral
	Percent	12.9	25.4	35.7	16.1	10			
FQS5	Freq.	141	132	23	12	3	1.72	0.83	Strongly agree
	Percent	45.3	42.4	7.4	3.9	1			
FQS6	Freq.	124	130	32	17	8	1.89	0.97	Agree
	Percent	39.9	41.8	10.3	5.5	2.6			
Total	Freq.	679	779	235	126	47	1.97	0.55	Agree
	Percent	36.3	41.7	12.6	6.7	2.5			

Table 25: Raw data of PE1 item

Previous experience items	Measure	Very satisfactory	Satisfactory to some extent	Not satisfactory	Median	IQR	Result
PE1	Freq. *	130	132	8	2	1, 2	Satisfactory to some extent
	Percent *	48.1	48.9	3			

* 41 cases not included

Table 26: Raw data of PE2 item

Previous experience items	Measure	Yes, positively	Yes, negatively	No effect	Median	IQR	Result
PE2	Freq. *	221	3	69	1	1, 1	Yes, positively
	Percent *	75.4	1	23.5			

* 18 cases not included

Table 27: Raw data of PS items

Perceived Simplicity items	Measure	Strongly agree	Agree	Don't know or neutral	Disagree	Strongly disagree	Mean	Std. Deviation	Result
PS1	Freq.	173	115	17	5	1	1.54	0.70	Strongly agree
	Percent	55.6	37	5.5	1.6	0.3			
PS2	Freq.	208	76	17	8	2	1.45	0.76	Strongly agree
	Percent	66.9	24.4	5.5	2.6	0.6			
PS3	Freq.	190	84	29	8	0	1.53	0.76	Strongly agree
	Percent	61.1	27	9.3	2.6	0			
PS4	Freq.	138	99	57	13	4	1.86	0.94	Agree
	Percent	44.4	31.8	18.3	4.2	1.3			
Total	Freq.	709	374	120	34	7	1.59	0.55	Strongly agree
	Percent	57	30	9.6	2.7	0.55			

Table 28: Raw data of TQS items

Technical Quality of Service items	Measure	Strongly agree	Agree	Don't know or neutral	Disagree	Strongly disagree	Mean	Std. Deviation	Result
TQS1	Freq.	138	93	28	32	20	2.04	1.23	Agree
	Percent	44.4	29.9	9	10.3	6.4			
TQS2	Freq.	236	50	21	4	0	1.33	0.66	Strongly agree
	Percent	75.9	16.1	6.8	1.3	0			
TQS3	Freq.	92	126	43	34	16	2.21	1.13	Agree
	Percent	29.6	40.5	13.8	10.9	5.1			
Total	Freq.	466	269	92	70	36	1.86	0.79	Agree
	Percent	49.9	28.8	9.8	7.5	3.8			

Table 29: Raw data of ACC items

Accessibility items	Measure	Strongly agree	Agree	Don't know or neutral	Disagree	Strongly disagree	Mean	Std. Deviation	Result
ACC1	Freq.	243	54	10	2	2	1.28	0.61	Strongly agree
	Percent	78.1	17.4	3.2	0.6	0.6			
ACC2	Freq.	131	119	29	25	7	1.90	1.01	Agree
	Percent	42.1	38.3	9.3	8	2.3			
Total	Freq.	374	173	39	27	9	1.59	0.71	Strongly agree
	Percent	60.1	27.8	6.2	4.3	1.4			

Table 30: Raw data of PT items

Perceived Trust items	Measure	Strongly agree	Agree	Don't know or neutral	Disagree	Strongly disagree	Mean	Std. Deviation	Result
PT1 (reversed)	Freq.	46	141	67	42	15	2.48 *(3.51)	1.05	Agree
	Percent	14.8	45.3	21.5	13.5	4.8			
PT2	Freq.	113	170	22	5	1	1.74	0.68	Strongly agree
	Percent	36.3	54.7	7.1	1.6	0.3			
PT3	Freq.	105	149	47	8	2	1.88	0.79	Agree
	Percent	33.8	47.9	15.1	2.6	0.6			
PT4 (reversed)	Freq.	49	149	62	40	11	2.40 *(3.59)	1.01	Agree
	Percent	15.8	47.9	19.9	12.9	3.5			
Total	Freq.	313	609	198	95	29	2.13	0.62	Agree
	Percent	25.1	48.9	15.9	7.6	2.3			

*The mean without reversing.

Table 31: Raw data of RP items

Regulations and Policies items	Measure	Strongly agree	Agree	Don't know or neutral	Disagree	Strongly disagree	Mean	Std. Deviation	Result
RP1	Freq.	199	75	27	9	1	1.51	0.79	Strongly agree
	Percent	64	24.1	8.7	2.9	0.3			
RP2	Freq.	162	106	28	11	4	1.67	0.87	Strongly agree
	Percent	52.1	34.1	9	3.5	1.3			
RP3	Freq.	217	77	12	2	3	1.38	0.68	Strongly agree
	Percent	69.8	24.8	3.9	0.6	1			
Total	Freq.	578	258	67	22	8	1.52	0.60	Strongly agree
	Percent	61.9	27.6	7.2	2.3	0.8			

Table 32: Raw data of ITU items

Intention to Use items	Measure	Strongly agree	Agree	Don't know or neutral	Disagree	Strongly disagree	Mean	Std. Deviation	Result
ITU1	Freq.	246	59	5	0	1	1.23	0.50	Strongly agree
	Percent	79.1	19	1.6	0	0.3			
ITU2	Freq.	197	95	13	4	2	1.45	0.69	Strongly agree
	Percent	63.3	30.5	4.2	1.3	0.6			
ITU3	Freq.	223	78	5	5	0	1.33	0.59	Strongly agree
	Percent	71.7	25.1	1.6	1.6	0			
ITU4	Freq.	264	42	4	1	0	1.17	0.43	Strongly agree
	Percent	84.9	13.5	1.3	0.3	0			
Total	Freq.	930	274	27	10	3	1.29	0.40	Strongly agree
	Percent	74.7	22	8.7	1.06	0.2			

Table 33: Raw data of PER items

Perceived E-Readiness items	Measure	Strongly agree	Agree	Don't know or neutral	Disagree	Strongly disagree	Mean	Std. Deviation	Result
PER1	Freq.	44	124	73	57	13	2.58	1.07	Agree
	Percent	14.1	39.9	23.5	18.3	4.2			
PER2	Freq.	14	40	33	114	110	3.85	1.16	Disagree
	Percent	4.5	12.9	10.6	36.7	35.4			
PER3	Freq.	16	53	30	99	113	3.77	1.24	Disagree
	Percent	5.1	17	9.6	31.8	36.3			
Total	Freq.	74	217	136	270	236	3.40	0.91	Disagree
	Percent	7.9	23.2	14.5	28.9	25.3			

Appendix C: Raw data of the business sector sample

Table 34: Raw data of PB items

Perceived benefit items	Measure	Strongly agree	Agree	Don't know or neutral	Disagree	Strongly disagree	Mean	Std. Deviation	Result
PB1	Freq.	37	10	1	0	0	1.25	0.48	Strongly agree
	Percent	77.1	20.8	2.1	0	0			
PB2	Freq.	39	7	1	1	0	1.25	0.60	Strongly agree
	Percent	81.3	14.6	2.1	2.1	0			
PB3	Freq.	36	7	4	1	0	1.37	0.73	Strongly agree
	Percent	75.0	14.6	8.3	2.1	0			
PB4	Freq.	35	8	4	1	0	1.39	0.73	Strongly agree
	Percent	72.9	16.7	8.3	2.1	0			
PB5	Freq.	36	8	3	1	0	1.35	0.69	Strongly agree
	Percent	75.0	16.7	6.3	2.1	0			
PB6	Freq.	27	12	7	1	1	1.68	0.94	Strongly agree
	Percent	56.3	25.0	14.6	2.1	2.1			
PB7	Freq.	37	8	2	1	0	1.31	0.65	Strongly agree
	Percent	77.1	16.7	4.2	2.1	0			
Total	Freq.	247	60	22	6	1	1.37	0.49	Strongly agree
	Percent	73.5	17.9	7	1.8	0.3			

Table 35: Raw data of SC items

Socio-Cultural items	Measure	Strongly agree	Agree	Don't know or neutral	Disagree	Strongly disagree	Mean	Std. Deviation	Result
SC1	Freq.	4	4	6	10	24	3.95	1.32	Disagree
	Percent	8.3	8.3	12.5	20.8	50			
SC2	Freq.	29	7	6	5	1	1.79	1.14	Strongly agree
	Percent	60.4	14.6	12.5	10.4	2.1			
SC3	Freq.	29	10	4	4	1	1.70	1.07	Strongly agree
	Percent	60.4	20.8	8.3	8.3	2.1			
SC4	Freq.	10	5	18	10	5	2.89	1.25	Don't know or neutral
	Percent	20.8	10.4	37.5	20.8	10.4			
SC5	Freq.	23	16	4	2	3	1.87	1.14	Strongly agree
	Percent	47.9	33.3	8.3	4.2	6.3			
Total	Freq.	95	42	38	31	34	2.44	0.79	Agree
	Percent	39.56	17.48	15.82	12.9	14.18			

Table 36: Raw data of AW part1 items

Awareness items	Measure	Strongly agree	Agree	Don't know or neutral	Disagree	Strongly disagree	Mean	Std. Deviation	Result
AW1	Freq.	13	18	14	2	1	2.16	0.95	Agree
	Percent	27.1	37.5	29.2	4.2	2.1			
AW2	Freq.	22	21	2	2	1	1.72	0.89	Strongly agree
	Percent	45.8	43.8	4.2	4.2	2.1			
AW3	Freq.	12	13	13	5	5	2.54	1.27	Agree
	Percent	25	27.1	27.1	10.4	10.4			
Total	Freq.	47	52	29	9	7	2.14	0.78	Agree
	Percent	32.6	36.1	20.2	18.8	4.9			

Table 37: Raw data of AW part2 items

Awareness items	Measure	Very influential	Influential to some extent	Don't know	Uninfluential to some extent	Very uninfluential	Mean	Std. Deviation	Result
AW4	Freq.	28	12	3	4	1	1.70	1.05	Very influential
	Percent	58.3	25	6.3	8.3	2.1			
AW5	Freq.	18	23	4	2	1	1.85	0.89	Influential to some extent
	Percent	37.5	47.9	8.3	4.2	2.1			
AW6	Freq.	11	20	10	6	1	2.29	1.03	Influential to some extent
	Percent	22.9	41.7	20.8	12.5	2.1			
AW7	Freq.	17	23	4	3	1	1.91	0.94	Influential to some extent
	Percent	35.4	47.9	8.3	6.3	2.1			
AW8	Freq.	20	13	7	7	1	2.08	1.16	Influential to some extent
	Percent	41.7	27.1	14.6	14.6	2.1			
AW9	Freq.	20	16	7	3	2	1.97	1.10	Influential to some extent
	Percent	41.7	33.3	14.6	6.3	4.2			
Total	Freq.	114	107	35	25	7	1.97	0.79	Influential to some extent
	Percent	39.9	37.1	12.15	8.7	14.7			

Table 38: Raw data of FQS part1 items

FQS items	Measure	Strongly agree	Agree	Don't know or neutral	Disagree	Strongly disagree	Mean	Std. Deviation	Result
FQS1	Freq.	6	17	17	5	3	2.62	1.04	Don't know or neutral
	Percent	12.5	35.4	35.4	10.4	6.3			
FQS2	Freq.	19	22	7	0	0	1.75	0.69	Strongly agree
	Percent	39.6	45.8	14.6	0	0			
FQS3	Freq.	7	14	14	8	5	2.79	1.20	Don't know or neutral
	Percent	14.6	29.2	29.2	16.7	10.4			
FQS4	Freq.	30	8	5	5	0	1.68	1.03	Strongly agree
	Percent	62.5	16.7	10.4	10.4	0			
Total	Freq.	62	61	43	18	8	2.21	0.66	Agree
	Percent	32.3	31.7	22.4	9.4	4.2			

Table 39: Raw data of FQS part2 items

FQS items	Measure	Very high importance	High importance	Medium importance	Low importance	Very low importance	Mean	Std. Deviation	Result
FQS5	Freq.	36	3	7	2	0	1.47	0.89	Very high importance
	Percent	75	6.3	14.6	4.2	0			
FQS6	Freq.	27	9	4	6	2	1.89	1.24	High importance
	Percent	56.3	18.8	8.3	12.5	4.2			
FQS7	Freq.	29	10	6	2	1	1.66	0.99	Very high importance
	Percent	60.4	20.8	12.5	4.2	2.1			
FQS8	Freq.	28	6	9	1	4	1.89	1.27	High importance
	Percent	58.3	12.5	18.8	2.1	8.3			
FQS9	Freq.	29	6	10	2	1	1.75	1.06	Very high importance
	Percent	60.4	12.5	20.8	4.2	2.1			
FQS10	Freq.	26	12	6	2	2	1.79	1.09	Very high importance
	Percent	54.2	25	12.5	4.2	4.2			
Total	Freq.	175	46	42	15	10	1.74	0.95	Very high importance
	Percent	60.8	15.98	14.58	5.2	3.5			

Table 40: Raw data of PE1 item

Previous experience items	Measure	Satisfactory	Satisfactory to some extent	Not satisfactory	Median	IQR	Result
PE1	Freq. *	20	25	1	2	1, 2	Satisfactory to some extent
	Percent*	43.5	54.3	2.1			

*2 cases not included

Table 41: Raw data of PE2 item

Previous experience items	Measure	Encourage to use EGOV	Hesitate to use EGOV	No effect	Median	IQR	Result
PE2	Freq.*	35	4	7	1	1, 1	Encourage to use EGOV
	Percent*	76.1	8.7	15.2			

*2 cases not included

Table 42: Raw data of PE3 item

Previous experience items	Measure	Yes, Positively	Yes, Negatively	No effect	Median	IQR	Result
PE3	Freq.*	19	1	13	1	1, 3	Yes, positively
	Percent*	57.6	3	39.4			

*15 cases not included

Table 43: Raw data of PS part1 items

Perceived simplicity items	Measure	Strongly agree	Agree	Don't know or neutral	Disagree	Strongly disagree	Mean	Std. Deviation	Result
PS1	Freq.	25	16	6	1	0	1.64	0.78	Strongly agree
	Percent	52.1	33.3	12.5	2.1	0			
PS2	Freq.	16	17	6	5	4	2.25	1.26	Agree
	Percent	33.3	35.4	12.5	10.4	8.3			
PS3	Freq.	17	21	5	3	2	2	1.05	Agree
	Percent	35.4	43.8	10.4	6.3	4.2			
Total	Freq.	58	54	17	9	6	1.96	0.63	Agree
	Percent	40.2	37.5	11.8	6.2	4.1			

Table 44: Raw data of PS part2 items

Perceived simplicity items	Measure	Very high importance	High importance	Medium importance	Low importance	Very low importance	Mean	Std. Deviation	Result
PS4	Freq.	26	10	9	3	0	1.77	0.97	Very high importance
	Percent	54.2	20.8	18.8	6.3	0			
PS5	Freq.	22	16	7	3	0	1.81	0.91	High importance
	Percent	45.8	33.3	14.6	6.3	0			
PS6	Freq.	27	8	10	3	0	1.77	0.99	Very high importance
	Percent	56.3	16.7	20.8	6.3	0			
Total	Freq.	75	34	26	9	0	1.78	0.89	Very high importance
	Percent	52.1	23.6	18	6.3	0			

Table 45: Raw data of TQS part1 items

TQS items	Measure	Strongly agree	Agree	Don't know or neutral	Disagree	Strongly disagree	Mean	Std. Deviation	Result
TQS1	Freq.	20	13	8	3	4	2.12	1.26	Agree
	Percent	41.7	27.1	16.7	6.3	8.3			
TQS2	Freq.	19	15	6	3	5	2.16	1.31	Agree
	Percent	39.6	31.3	12.5	6.3	10.4			
Total	Freq.	39	28	14	6	9	2.40	0.96	Agree
	Percent	40.65	29.2	14.6	6.3	9.35			

Table 46: Raw data of TQS part2 items

TQS items	Measure	Very high importance	High importance	Medium importance	Low importance	Very low importance	Mean	Std. Deviation	Result
TQS3	Freq.	24	13	7	3	1	1.83	1.03	High importance
	Percent	50	27.1	14.6	6.3	2.1			
TQS4	Freq.	22	14	7	5	0	1.89	1.01	High importance
	Percent	45.8	29.2	14.6	10.4	0			
TQS5	Freq.	23	14	9	2	0	1.79	0.89	Very high importance
	Percent	47.9	29.2	18.8	4.2	0			
Total	Freq.	69	41	23	10	1	1.84	0.87	High importance
	Percent	47.9	28.5	16	6.9	0.7			

Table 47: Raw data of ACC part1 item

ACC items	Measure	Strongly agree	Agree	Don't know or neutral	Disagree	Strongly disagree	Median	IQR	Result
ACC1	Freq.	17	19	8	4	0	2	1, 2.5	Agree
	Percent	35.4	39.6	16.7	8.3	0			

Table 48: Raw data of ACC part2 items

ACC items	Measure	Very high importance	High importance	Medium importance	Low importance	Very low importance	Mean	Std. Deviation	Result
ACC2	Freq.	26	10	7	3	2	1.85	1.14	High importance
	Percent	54.2	20.8	14.6	6.3	4.2			
ACC3	Freq.	27	10	8	0	3	1.79	1.12	Very high importance
	Percent	56.3	20.8	16.7	0	6.3			
ACC4	Freq.	32	10	5	0	1	1.5	0.85	Very high importance
	Percent	66.7	20.8	10.4	0	2.1			
Total	Freq.	85	30	20	6	3	1.71	0.85	Very high importance
	Percent	59.1	20.8	13.9	2.1	4.2			

Table 49: Raw data of PT items

Perceived Trust items	Measure	Strongly agree	Agree	Don't know or neutral	Disagree	Strongly disagree	Mean	Std. Deviation	Result
PT1 (reverse)	Freq.	2	11	7	15	13	2.45 (3.54)*	1.23	Agree
	Percent	4.2	22.9	14.6	31.3	27.1			
PT2	Freq.	21	19	5	3	0	1.79	0.87	Strongly agree
	Percent	43.8	39.6	10.4	6.3	0			
PT3 (reverse)	Freq.	3	6	12	11	16	2.35 (3.64)*	1.24	Agree
	Percent	6.3	12.5	25	22.9	33.3			
PT4 (reverse)	Freq.	4	8	10	14	12	2.54 (3.45)*	1.27	Agree
	Percent	8.3	16.7	20.8	29.2	25			
PT5 (reverse)	Freq.	3	4	14	11	16	2.31 (3.68)*	1.20	Agree
	Percent	6.3	8.3	29.2	22.9	33.3			
PT6 (reverse)	Freq.	4	5	8	13	18	2.25 (3.75)*	1.29	Agree
	Percent	8.3	10.4	16.7	27.1	37.5			
PT7 (reverse)	Freq.	8	19	9	6	6	3.35 (2.64)*	1.26	Do not know or neutral
	Percent	16.7	39.6	18.8	12.5	12.5			
PT8	Freq.	19	19	10	0	0	1.81	0.76	Agree
	Percent	39.6	39.6	20.8	0	0			
PT9	Freq.	18	12	10	4	4	2.25	1.27	Agree
	Percent	37.5	25	20.8	8.3	8.3			
Total	Freq.	109	103	85	77	85	2.34	0.71	Agree
	Percent	19	23.8	19.6	17.8	19.6			

* The mean without reversing

Table 50: Raw data of RP items

RP items	Measure	Very high importance	High importance	Medium importance	Low importance	Very low importance	Mean	Std. Deviation	Result
RP1	Freq.	23	17	7	1	0	1.70	0.79	Very high importance
	Percent	47.9	35.4	14.6	2.1	0			
RP2	Freq.	23	15	7	2	1	1.81	0.98	High importance
	Percent	47.9	31.3	14.6	4.2	2.1			
RP3	Freq.	29	11	7	1	0	1.58	0.82	Very high importance
	Percent	60.4	22.9	14.6	2.1	0			
RP4	Freq.	26	12	7	2	1	1.75	1.0	Very high importance
	Percent	54.2	25	14.6	4.2	2.1			
Total	Freq.	101	55	28	6	2	1.71	0.79	Very high importance
	Percent	52.6	28.6	14.6	3.15	1.05			

Table 51: Raw data of ITU items

ITU items	Measure	Strongly agree	Agree	Don't know or neutral	Disagree	Strongly disagree	Mean	Std. deviation	Result
ITU1	Freq.	40	6	1	0	1	1.25	0.96	Strongly agree
	Percent	83.3	12.5	2.1	0	2.1			
ITU2	Freq.	38	7	1	0	2	1.35	0.88	Strongly agree
	Percent	79.2	14.6	2.1	0	4.2			
Total	Freq.	78	13	2	0	3	1.30	0.68	Strongly agree
	Percent	81.2	13.5	2.1	0	3.15			

Table 52: Raw data of PER items

PER items	Measure	Strongly agree	Agree	Don't know or neutral	Disagree	Strongly disagree	Mean	Std. deviation	Result
PER1	Freq.	17	16	10	5	0	2.06	0.99	Agree
	Percent	35.4	33.3	20.8	10.4	0			
PER2	Freq.	12	16	12	5	3	2.39	1.16	Agree
	Percent	25	33.3	25	10.4	6.3			
Total	Freq.	23	30	26	12	5	2.22	0.91	Agree
	Percent	24	31.25	27.1	12.5	5.2			

Appendix D: Data collection documents for the citizens' sample (English and Arabic versions)

University of Sussex

I am a PhD research student at the University of Sussex, Informatics Department and I am conducting a study to investigate and analyse factors that affect users' adoption and utilisation of online services and transactions provided by e- Government systems in Saudi Arabia. The research title is:

Key Factors Influencing the Adoption and Utilisation of E-Government systems in Saudi Arabia.

You are invited to take part in this research study because you are a citizen (aged 18 years or over) in Saudi Arabia either you are currently using e-Government systems to perform transactions or not. Before you decide whether or not to take part, it is important for you to understand why the research is being done and what it will involve. Please take time to read the following information carefully.

E-Government means the utilisation of various Information and Communication Technologies (ICTs) for facilitating the communications between government and beneficiaries (citizens, business sector and between different governmental agencies); providing effective, efficient and integrated e-Services; enhancing the relationship between the government and beneficiaries throw multiple and flexible channels leading to more participation and engagement. These are some examples of e-Services that are provided/can be provided through e-Government system 24 hours/7days:

- Pay for traffic fines or pay for government transactions online
- Apply for national ID card, driving license and passport completely online and receive them at home.
- Book appointments with government agencies online
- View and track all governmental transactions that you have performed online with different government agencies.
- Apply for governmental jobs

One of the most important elements of implementing E-Government systems is the interaction between users and E-Government systems. This interaction element is considered the main method that can measure the utilisation and success of E-Government systems. Therefore, this research will investigate and analyse factors that can influence the adoption and utilisation of e-Government in Saudi Arabia based on a framework that has been developed for this purpose.

The study involves group of samples and this part of the study is targeting public users who have/have not used e-Government services. Your participation is highly appreciated and will contribute to the success of this study which aims to understand the factors that influence the utilisation of e-Government systems in Saudi Arabia.
Participation should not take more than 30 minutes of your time to complete a 108-item questionnaire. The questionnaire designed for this study consists of five sections. The first section contains general information questions while the second section collects information about your proficiency in using computer and the Internet; also collect information about your e-Government usage. The third section collects information about your preferences when obtaining governmental services. The fourth section assesses your agreement degree on statements related to factors that might affect your e-Government usage. The fifth section measures the importance of implementing some properties in e- Government systems. Returning the completed questionnaire implies your consent to participate.

My research also involves short interviews (approximately 30-45 minutes) which will give me the opportunity to know more about your opinion on implementing e-Government in Saudi Arabia and the factors that may influence its utilisation. If you are interested to participate in the interview, you can participate straightaway after completing the questionnaire or you will be asked to write your contact details at the end of the questionnaire copy so I can arrange a short meeting with you. You will be asked to sign a consent form and you have the option to participate in the questionnaire only or to participate in both the questionnaire and the interview.

Your participation is voluntary; it is up to you to decide whether to take part or not. If you decide to take part, you should keep this information sheet for your record. If you decide to take part, you are still free to withdraw at any time and without giving a reason. All data collected for this study will be kept strictly confidential. All data will be anonymised and pseudonyms will be used in the transcripts of the interviews to maintain the participants' privacy. The results of this study will be analysed and used in my research thesis. If you would like to have a copy of the results, contact me at my email address presented below.

This research has been approved by the Sciences and Technology Cross-Schools Research Ethics Committee (C-REC).

Contact point for further information:
Researcher: Saleh Alghamdi
E-mail: sa434@sussex.ac.uk
Phone: +44 7790008811

If you have any concern about the way in which the study has been conducted, you could contact my supervisor and the ethics committee (C-REC):

Dr Natalia Beloff, E-mail: N.Beloff@sussex.ac.uk, Phone: +44 (0) 1273 678919
Department of Informatics, University of Sussex, Falmer, Brighton BN1 9QJ
Ethics Committee (C-REC): crecscitec@sussex.ac.uk

Thank you for taking time to read the information sheet
Date:

University of Sussex

First section: General information
Please answer the following questions by choosing the right answers that apply to you:

1. **Please indicate your gender:**
   - o Male
   - o Female

2. **What is your age?**
   - o 18 - 30
   - o 31 - 45
   - o 46 - 60
   - o Over 60

3. **What is your nationality?**
   - o Saudi
   - o Non-Saudi

4. **What is your education level?**
   - o Was not educated in school
   - o Secondary school or less
   - o Diploma
   - o Bachelor degree
   - o Master degree
   - o Doctorate or higher

5. **Which of the following best describes the type of area you live in?**
   - o Village
   - o Small city
   - o Large city

6. **What is your occupation?**
   - o Unemployed
   - o Student
   - o Governmental employee
   - o Private sector employee
   - o Self employed

7. **What is your monthly income in Saudi Riyal?**
   - o 0-4999
   - o 5000-9999
   - o 10000-14999
   - o 15000-19999
   - o 20000 or more

8. **What is your marital status?**
   - o Single
   - o Married
   - o Divorced
   - o Widowed

Second section: Information about your Internet and e-Government usage
Please answer the following questions by choosing the right answers that apply to you:

9. **Describe your proficiency of using computer?**
   - o Low
   - o Average
   - o Good
   - o Excellent

10. **How usually do you use the Internet?**
   - o Everyday
   - o Several days a week
   - o Several days a month
   - o Never use the Internet (move to the third section)

11. **Did you know what is the meaning of e-Government before participating in this questionnaire?**
   - o Yes
   - o No

12. **Do you have the willingness to know more about e-Government?**
   - o Yes
   - o No

13. **Have you ever performed Saudi e-Government transactions (such as paying traffic fines, Passport transactions, ID cards transactions ...etc.)?**
   - o Yes (move to question 15)
   - o No

14. **What are the reasons that prevent you from using e-Government transactions?** (You can choose more than one answer, then move to question 18)
   - ☐ I do not have computer
   - ☐ I do not have Internet
   - ☐ Using e-Government services is difficult for me
   - ☐ I do not trust e-Government services
   - ☐ The governmental transactions that I need are not available through e-Government

15. **How do you rate your experience of using e-Government in general?**
   - o Very Satisfactory (move to question 17)
   - o Satisfactory to some extent
   - o Not satisfactory

16. **What are the reasons that made your e-Government experience unsatisfactory?** (You can choose more than one answer)
   - ☐ The requirements of the intended e-Services were not clear
   - ☐ I did not get the expected results
   - ☐ The difficulty of using e-Government services
   - ☐ Other ……

17. **How the previous experience of using e-Government services will affect your future use of such e-Services?**
   - o Will encourage me to use e-Government services more
   - o Will make me hesitant to use e-Government services again
   - o Will not affect my future usage

18. **Have you ever performed non-governmental online services (such as online purchasing, online banking ....etc.)?**
   - o Yes
   - o No (move to the third section)

19. How do you rate your experience of using non-government online services in general?

- Very Satisfactory
- Satisfactory to some extent
- Not satisfactory

20. How the previous experience of performing non-governmental online services will affect your willingness to use e-Government services?

- Will encourage me to use e-Government services more
- Will make me hesitant to use e-Government services
- Will not affect my future usage

Third section: Information about your preferences when obtaining governmental services

Please answer the following questions by ticking the right boxes that apply to you.

21. What are the methods that you use to get information related to your governmental transactions such as the agency opening hours, the agency branches, your transaction requirements.. etc.?

		I usually use it	I sometimes use it	I never use it
A.	Call the intended agency by phone	☐	☐	☐
B.	Ask somebody who has previously dealt with the indented agency	☐	☐	☐
C.	Find the information from the agency's websites	☐	☐	☐
D.	Search in the Internet	☐	☐	☐
E.	Visit the intended agency and ask them	☐	☐	☐
F.	Other ……..			

22. What are the methods that you prefer to use to pay for your governmental transactions?

		Strongly preferred	Preferred to some extent	Not preferred
A.	Online banking	☐	☐	☐
B.	ATM machines	☐	☐	☐
C.	Phone banking	☐	☐	☐
D.	Banks branches	☐	☐	☐
E.	Ask my friends or my relatives to pay for me	☐	☐	☐
F.	Ask service offices that are usually exist outside the agencies to pay for me	☐	☐	☐

23. What are the methods that you prefer to use (if available) to seek help when you face problems while using e-Government services.

		Strongly preferred	Preferred to some extent	Not preferred
A.	Call customer service by phone	☐	☐	☐
B.	Use online chat with the agency representative	☐	☐	☐
C.	Send emails to the agency	☐	☐	☐
D.	Search on the Internet	☐	☐	☐
E.	Seek help from somebody who has previously used the same transaction	☐	☐	☐
F.	Try to find solution from Frequently Asked Questions (FAQ)	☐	☐	☐
G.	Other ……			

24. What are the advertising methods that can affect your willingness to use e-Government?

		Very influential	Influential to some extent	I do not know	Uninfluential to some extent	Very uninfluential
A.	Advertisements on social media	☐	☐	☐	☐	☐
B.	Advertisements on governmental agencies' websites	☐	☐	☐	☐	☐
C.	Advertisements in newspapers and magazines	☐	☐	☐	☐	☐
D.	Advertisements in public areas	☐	☐	☐	☐	☐
E.	Advertisements through emails and text messages	☐	☐	☐	☐	☐
F.	Advertisements on TV and radio channels	☐	☐	☐	☐	☐

Fourth section: Information related to factors that may influence your e-Government usage
Please indicate your opinion about the following statements by circling the number which best represent your choice.

1= Strongly agree
2= Agree
3= I do not know or neutral
4= Disagree
5= Strongly disagree

25. Statements about your willingness to use e-Government systems	Strongly agree				Strongly disagree
a. I intend to use e-Government services for all my governmental transactions (where available)	1	2	3	4	5
b. I do not mind to learn how to use e-Government services and Transactions	1	2	3	4	5

26. Statements about the e-Readiness of e-Government systems	Strongly agree				Strongly disagree
a. I think that the current infrastructure in Saudi Arabia is not sufficient/efficient to implement successful e-Government systems.	1	2	3	4	5
b. I feel that the governmental organisations are not able to implement satisfactory e-Services that meet customers' needs.	1	2	3	4	5

27. Statement about the expected benefits from using e-Government	Strongly agree				Strongly disagree
a. Using e-Government would enable me to perform governmental transactions quickly than traditional ways.	1	2	3	4	5
b. I think using e-Government systems would save me multiple visits to different agencies when performing my transactions.	1	2	3	4	5
c. Using e-Government would save my time, money and effort.	1	2	3	4	5
d. Using e-Government would reduce my dependency on friends, relatives and service offices when performing governmental transactions.	1	2	3	4	5
e. I believe that e-Government would reduce the need for some procedures that may delay my transactions such as intercession letters and documents ratification.	1	2	3	4	5
f. I believe that e-Government will ensure the equality when processing users' transactions.	1	2	3	4	5
g. The ability to perform governmental transactions (24 hours/7 days) will encourage me use e-Government more.	1	2	3	4	5

28. Statements about the influence of social and cultural aspects		Strongly agree				Strongly disagree
a.	Using e-Government will make me feel more sophisticated and will enhance people's perception about me.	1	2	3	4	5
b.	The use of my family members and my friends for e-Government services will encourage me to use it.	1	2	3	4	5
c.	I believe that e-Government systems would reduce the influence of interpersonal networks (WASTA) on processing individuals' transactions.	1	2	3	4	5
d.	I feel that dealing with the government agencies face to face is better than using e-Government systems.	1	2	3	4	5
e.	Using e-Government would prevent the negative influence of some uncooperative employee on my transactions.	1	2	3	4	5
f.	I feel that visiting agencies to track my transactions is better than tracking them online.	1	2	3	4	5
g.	I prefer authorising a third party such as service offices to perform my transactions to using e-Government.	1	2	3	4	5

29. Statements about e-Government awareness aspects		Strongly agree				Strongly disagree
a.	I feel that I have a good knowledge about e-Government benefits, features and services.	1	2	3	4	5
b.	I think it is easy to know whether the intended government service is available online or not.	1	2	3	4	5
c.	Offering workshops and visual presentations about e-Government services in public areas will encourage me to attend and find out more about e-Government.	1	2	3	4	5
d.	I am satisfied with the current awareness campaigns and advertising about e-Government services in Saudi Arabia.	1	2	3	4	5

30. Statements about the quality aspects of e-Government services		Strongly agree				Strongly disagree
a.	I feel that the current e-Government services in Saudi Arabia are of high quality.	1	2	3	4	5
b.	I think that the current post mail services in Saudi Arabia are fast and reliable to deliver the required documents when using e-Government services.	1	2	3	4	5
c.	I think paying for e-Government services and transactions with SADAD system is sufficient and enough.	1	2	3	4	5
d.	The existence of technical errors (such as links not working or under construct pages) while using e-Government services will reduce my willingness to use such e-Services.	1	2	3	4	5

31. Statements about the simplicity of using e-Government		Strongly agree				Strongly disagree
a.	I think that e-Government services are easy to use.	1	2	3	4	5
b.	I think that using e-Government services require a lot of concentration and effort.	1	2	3	4	5
c.	I believe that e-Government systems will make performing the governmental transactions easier than traditional ways.	1	2	3	4	5
d.	The bad layout and unattractive interfaces of e-Government websites would reduce my willingness to use e-Services.	1	2	3	4	5
e.	I think the existence of many authorised offices to help users with their online government applications and their correspondence with agencies is a good idea.	1	2	3	4	5
f.	The difficulty of reaching to e-Services links would reduce my willingness to perform my government transaction online (hidden and indirect links).	1	2	3	4	5

32. Statements about the reliability aspects in e-Government		Strongly agree				Strongly disagree
a.	I feel that the Internet is not safe to be used for dealing with government.	1	2	3	4	5
b.	I feel that e-Government is a safe environment to perform my governmental transactions.	1	2	3	4	5
c.	I would hesitate to provide financial information (such as my bank account or credit cards details) through e-Government systems.	1	2	3	4	5
d.	I would hesitate to provide personal information (such as my address, my income …. etc.) through e-Government systems.	1	2	3	4	5
e.	I feel that my data that is stored in e-Government systems can be used by other parties without my permission.	1	2	3	4	5
f.	I feel that my data that is stored in e-Government systems can be misused.	1	2	3	4	5
g.	I think that government agencies in Saudi Arabia can be trusted to provide trustworthy electronic services.	1	2	3	4	5

Fifth section: Measuring the importance of implementing some properties in e-Government systems.

To what extent the following properties are important to you when you use e-Government systems.

33. The importance of providing the following information in e-Government websites.	Degree of importance				
	Very high	High	Middle	Low	Very low
a. Detailed steps on how to perform e-Services	☐	☐	☐	☐	☐
b. Help text/image (examples) of the e-Services requirements	☐	☐	☐	☐	☐
c. Explanation of how your transactions will be processed	☐	☐	☐	☐	☐
d. The expected time for e-Transactions processing	☐	☐	☐	☐	☐
e. The expected time that you should spend when performing a transaction	☐	☐	☐	☐	☐
f. The last update date of the e-Service website	☐	☐	☐	☐	☐
g. The time of the last e-Transaction that has been performed by the users	☐	☐	☐	☐	☐
h. Information security policies	☐	☐	☐	☐	☐
i. Information privacy policies	☐	☐	☐	☐	☐
j. Regulations and laws that are related to reserve the users and agencies rights	☐	☐	☐	☐	☐

34. The importance of implementing the following features in e-Government systems.	Degree of importance				
	Very high	High	Middle	Low	Very low
a. The ability to track the status of my performed e-Transactions online	☐	☐	☐	☐	☐
b. The ability to view the history of my performed e-Transactions online	☐	☐	☐	☐	☐
c. The ability to evaluate and rate the quality of the provided e-Services	☐	☐	☐	☐	☐
d. A full access to my data with a full control of its presence in e-Government systems	☐	☐	☐	☐	☐
e. The existence of official mobile applications that enable me to interact with e-Government systems	☐	☐	☐	☐	☐
f. The existence of electronic machines in public areas to perform some transactions	☐	☐	☐	☐	☐
g. Communicating with me (by emails or text messages) regarding to the status of my online governmental transactions	☐	☐	☐	☐	☐

If you have any additional information related to implementing e-Government in Saudi Arabia and the factors that influence its utilization, please write it here

……

……

……

Please provide your contact details if you are interested to participate in the interview (30-45 minutes) at different time so I can arrange a suitable time/place for you to take part.
……

Thank you very much again for your time and your participation
Saleh Alghamdi

University of Sussex

Interview Guide for public users:

1. Have you ever performed any governmental e-Services or e-Transactions in Saudi Arabia?

If yes,

2. What are they and what do you think of them generally?
3. Do you believe that using e-Government to perform services and transactions is better than traditional ways? Why?
4. Could you please describe the most prominent experiences of using e-Government services and transactions? What are the issues that you faced?
5. Please explain to what extent do you think that the following factors would influence the citizens' acceptance and willingness to use e-Government.

   Personal factors (age, gender, education level, location of living, user's income)
   Other factors (awareness and advertising campaigns, ease of use e-Services, ease of access to e-Services)

6. In your opinion, what are the factors and reasons that would encourage users to adopt and use e-Government services?
7. What are the factors and reasons that discourage/prevent users from using e-Government services?
8. Do you think that social and cultural aspects of the Saudi society would affect on the users' adoption and use (e.g. influenced by others' use, others' praise/criticize when use, fear of use technology)?
9. Do you think that providing/applying laws, policies and conditions for using e-Government would have an impact on the users' adoption and use? Would you read them if they are provided?
10. How do you see the influence of the supportive services on the users' adoption, acceptance and use (e.g. Saudi post services, SADAD payment services)?

    Is there anything you would like to add?

If no,

11. What are the reasons for not using e-Government services and transactions?
12. In your opinion, what government agencies should do to encourage you to use e-Services and e-Transactions?

University of Sussex

أنا باحث دكتوراه في جامعة ساسيكس بالمملكة المتحدة، قسم المعلوماتية وبحثي يهتم بدراسة وتحليل العوامل المؤثرة على تبني واستخدام الخدمات الحكومية الإلكترونية (خدمات وتعاملات الحكومة الإلكترونية) في المملكة العربية السعودية. عنوان البحث هو:

تحليل العوامل المؤثرة على تبني واستخدام أنظمة وخدمات الحكومة الإلكترونية في المملكة العربية السعودية

أنت مدعو للمشاركة في هذه الاستبانة التي تستهدف المواطنين السعوديين (فوق ١٨ سنه) بغض النظر إذا كان سبق استخدامها أم لا. أود في البداية توضيح الهدف من البحث وماذا ستتضمن المشاركة فيه. خدمات الحكومة الإلكترونية تعني استخدام و توظيف تقنيات الإتصالات والمعلومات لتسهيل التواصل والتعامل بين الجهات الحكومية والمستفيدين (مواطنين، قطاع الأعمال أو جهات حكومية أخرى) وذلك بتقديم خدمات وتعاملات إلكترونية متكاملة ذات فعالية وكفاءة عالية مما يساهم في تعزيز التواصل والمشاركة من خلال قنوات متعددة ومرنة. هذه أمثلة على بعض الخدمات والتعاملات الإلكترونية التي تقدم أو يمكن أن تقدم من خلال الحكومة الإلكترونية ٢٤ ساعة/٧أيام في الأسبوع:

- الدفع الإلكتروني لرسوم الخدمات الحكومية أو المخالفات المرورية.
- طلب إصدار بطاقة هوية وطنية، رخصة قيادة أو جواز سفر إلكترونياً وإستلامها من المنزل.
- حجز مواعيد في الجهات الحكومية إلكترونياً.
- إستعراض ومتابعة جميع الخدمات الحكومية التي تم إجرائها إلكترونياً.
- التقديم على الوظائف الحكومية إلكترونياً.

أحد أهم العناصر في تطبيق الحكومة الإلكترونية هو عنصر التفاعل بين المستخدمين وأنظمة الحكومة الإلكترونية. هذا التفاعل يعتبر من أهم العناصر لقياس مدى تقبل وإستخدام أنظمة وخدمات الحكومة الإلكترونية ومدى نجاحها. لذلك، هذا البحث يدرس ويحلل العوامل التي تؤثر على تبني، تقبل وإستخدام خدمات وتعاملات الحكومة الإلكترونية في المملكة العربية السعودية بناءاً على منهجية طورت في هذا البحث لهذا الغرض. هذا البحث يستهدف مجموعة مختلفة من المستخدمين وهذه الإستبانة تخص وتستهدف المواطنين السعوديين في المملكة العربية السعودية. أقدر تماماً مشاركتك في الدراسة والتي ستساهم في نجاح هذا البحث الذي يهدف إلى تحسين وتطوير تطبيقات الحكومة الإلكترونية بما يتناسب مع متطلبات المستخدمين.

المشاركة في هذه الدراسة تستغرق تقريباً ٣٠ دقيقة للإجابة على الإستبانه التي تحتوي على ١٠٨ أسئلة. الإستبانه تحتوي على خمسة أجزاء وهي كالتالي: الجزء الأول يشمل أسئلة عامة بينما الجزء الثاني يشمل أسئلة عن مهاراتك في إستخدام الكمبيوتر والإنترنت وكذلك أسئلة عن إستخدامك للخدمات الحكومية الإلكترونية. الجزء الثالث يشمل أسئلة عن تفضيلاتك في الحصول على خدمات حكومية. الجزء الرابع يقيم مدى تأثير عدد من العوامل على إستخدامك للخدمات الحكومية الإلكترونية. الجزء الخامس يقيس أهمية تقديم بعض المعلومات وتطبيق بعض الخيارات في الخدمات الحكومية الإلكترونية. إجابتك على هذه الإستبانه وتسليمها للباحث تعني موافقتك على المشاركة.

البحث أيضاً يشتمل على مقابلات شخصية قصيرة (تقريباً ٣٠ ـ ٤٥ دقيقة) والتي سوف تعطي الفرصة لمعرفة المزيد عن آرائك في تطبيق خدمات الحكومة الإلكترونية في السعودية والعوامل المؤثرة على إستخدامها. إذا كنت مهتم بالمشاركة في المقابلة، يمكنك المشاركة بعد إكمال الإستبانة مباشرة أو تزويدي ببيانات الإتصال الخاصة بك في نهاية الإستبانة لترتيب وقت مناسب للمقابلة. سوف يتم طلب توقيعك على نموذج المشاركة في حال قبلت كما أنه يمكنك المشاركة في الإستبانة فقط أو المشاركة في الإستبانة والمقابلة معاً.

مشاركتك تعتبر تطوعية مما يعني أن الخيار لك في المشاركة من عدمها. أرجو الإحتفاظ بورقة المعلومات هذه في حالة الرغبة بالمشاركة. إذا قررت المشاركة في الدراسة، يمكنك الإنسحاب في أي وقت وبدون إعطاء أسباب. جميع البيانات والمعلومات التي سيتم جمعها سوف يتم حفظها بسرية تامة. سوف يتم إخفاء وترميز أي معلومات يمكن من خلالها تحديد هوية المشارك للحفاظ على خصوصية المشاركين. سوف يتم تحليل نتائج هذه الدراسة وإستخدامها لأغراض البحث فقط. إذا أردت مناقشة نتائج هذه الدراسة، لا تتردد في التواصل معي.

تمت الموافقة على إجراء هذه الدراسة من قبل لجنة أخلاقيات بحوث العلوم والتقنية (C_REC) بجامعة ساسيكس.

وسائل التواصل مع الباحث:
صالح الغامدي، البريد الإلكتروني: sa434@sussex.ac.uk، رقم الهاتف: 00447790008811

إذا كان لديك أي إستفسارات عن الطريقة التي تمت خلالها هذه الدراسة، يرجى التواصل مع المشرف الأكاديمي أو لجنة أخلاقيات بحوث العلوم والتقنية (C_REC):

الدكتورة ناتاليا بيلوف، البريد الإلكتروني: N.Beloff@sussex.ac.uk, هاتف: 00441273678919
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لجنة أخلاقيات بحوث العلوم والتقنية (C_REC): crecscitec@sussex.ac.uk

شكراً جزيلاً
التاريخ:

University of Sussex

الجزء الأول – معلومات عامة
أرجو اختيار الإجابة المناسبة للأسئلة التالية:

1. **الجنس:**
   - ذكر
   - أنثى
2. **العمر:**
   - 18 – 30
   - 31 – 45
   - 46 – 60
   - أكثر من 60
3. **الجنسية:**
   - سعودي
   - غير سعودي
4. **المؤهل العلمي:**
   - لم يتم التعلم في المدارس
   - ثانوي أو أقل
   - دبلوم
   - بكالوريوس
   - ماجستير
   - دكتوراه
5. **وصف المنطقة التي تعيش فيها:**
   - قرية
   - مدينة صغيره
   - مدينة كبيره (رئيسية)
6. **المهنة:**
   - غير موظف
   - طالب
   - موظف حكومي
   - موظف قطاع خاص
   - صاحب أعمال حره
7. **الدخل الشهري (بالريال السعودي):**
   - 0 – 4999
   - 5000 – 9999
   - 10000 – 14999
   - 15000 – 19999
   - 20000 أو أكثر
8. **الحالة الإجتماعية:**
   - أعزب
   - متزوج
   - مطلق
   - أرمل

الجزء الثاني – معلومات عن معرفتك للحاسب الآلي واستخدامك للانترنت والخدمات الإلكترونية
أرجو اختيار الإجابة المناسبة للأسئلة التالية :

9. **كيف تقيم مستوى معرفتك لاستخدام الحاسب الآلي (الكمبيوتر) بشكل عام؟**
   - ضعيفة
   - متوسطة
   - جيدة
   - ممتازة

10. كم هو عدد مرات استخدامك للانترنت؟

- o لا استخدم الانترنت (انتقل الى الجزء الثالث)
- o كل يوم
- o عدة مرات في الاسبوع
- o عدة مرات في الشهر
- o عدة مرات في السنة

11. هل كنت تعرف ما معنى الحكومة الإلكترونية قبل المشاركة في هذا الاستبيان؟

- o نعم
- o لا

12. هل لديك الرغبة في معرفة المزيد عن الحكومة الإلكترونية؟

- o نعم
- o لا

13. هل سبق وان استخدمت خدمات حكومية إلكترونية سعودية عبر الانترنت (مثل دفع المخالفات المرورية, انجاز معاملات الجوازات, خدمات وزارة التعليم العالي والأحوال المدنية ...الخ)

- o نعم (انتقل الى سؤال 15)
- o لا

14. ماهي أسباب عدم استخدامك للخدمات الحكومية الإلكترونية, يمكن اختيار أكثر من اجابة؟ (ثم انتقل الى سؤال 18)

- ☐ لا يوجد لدي كمبيوتر
- ☐ لا يوجد لدي اتصال بالانترنت
- ☐ استخدام الخدمات الحكومية الالكترونية صعب
- ☐ لا اثق بالخدمات الحكومية المقدمة عبر الانترنت
- ☐ الخدمات الالكترونية التي احتاجها غير متوفرة عبر الانترنت

15. كيف تقيم تجربتك لاستخدام الخدمات الحكومية الإلكترونية المتاحة عبر الانترنت بشكل عام؟

- o مرضيه جداً (انتقل الى سؤال 17)
- o مرضيه الى حد ما
- o غير مرضيه

16. ماهي أسباب عدم رضاك التام عند استخدامك للخدمات الحكومية الإلكترونية؟

- ☐ متطلبات الخدمات الإلكترونية غير واضحة
- ☐ لم احصل على النتائج المتوقعة
- ☐ صعوبة استخدام الخدمات الحكومية الإلكترونية
- ☐ اسباب اخرى .....

17. كيف ستؤثر تجربتك السابقة لاستخدام الخدمات الحكومية الإلكترونية على استخدامك لها في المستقبل؟

- o سوف تشجعني على استخدام خدمات الكترونية اكثر
- o سوف تجعلني متردداً في استخدام الخدمات الإلكترونية مرة اخرى
- o لن تؤثر على رغبتي في استخدام الخدمات الإلكترونية مستقبلاً

18. هل سبق وأن استخدمت خدمات الكترونية غير حكومية عبر الانترنت (مثل الشراء عبر الانترنت او خدمات البنوك الالكترونية)؟

- o نعم
- o لا (انتقل الى الجزء الثالث)

19. كيف تقيم تجربتك بالقيام بخدمات الكترونية غير حكومية عبر الانترنت بشكل عام؟

- o مرضية جداً
- o مرضية الى حد ما
- o غير مرضية

20. كيف ستؤثر تجربتك للخدمات الالكترونية الغير حكومية على رغبتك في استخدام الخدمات الحكومية الإلكترونية؟

- o سوف تشجعني على استخدام خدمات حكومية الكترونية اكثر
- o سوف تجعلني متردداً في استخدام الخدمات الحكومية الإلكترونية
- o لن تؤثر على رغبتي في استخدام الخدمات الحكومية الإلكترونية مستقبلاً

الجزء الثالث – معلومات متعلقة بالطرق المفضلة لديك في الحصول على خدمات حكومية.

ارجو الاجابة على الاسئلة التالية بوضع علامة (X) على الاختيار المناسب.

21. ماهي الطرق التي تفضل أن تستخدمها عادةً للحصول على معلومات تحتاجها في معاملاتك الحكومية مثل: ساعات عمل الجهه الحكومية, فروع الجهه الحكومية, خطوات ومتطلبات المعاملة الحكومية التي ترغب بإجرائها ....الخ

	استخدمها دائماً	استخدمها احياناً	لا استخدمها
الاتصال هاتفياً بالجهه الحكومية	□	□	□
سؤال صديق أو قريب سبق وأن تعامل مع نفس الجهه الحكومية	□	□	□
الحصول على المعلومات من الموقع الإلكتروني للجهه الحكومية	□	□	□
البحث في الانترنت	□	□	□
زيارة الجهه الحكومية شخصياً	□	□	□

أخرى .....

22. ماهي الطرق التي تفضل أن تستخدمها لدفع رسوم معاملاتك الحكومية

	استخدمها دائماً	استخدمها احياناً	لا استخدمها
الخدمات البنكية الإلكترونية عبر الانترنت	□	□	□
الصرافات الآلية	□	□	□
الهاتف المصرفي	□	□	□
فروع البنوك	□	□	□
الاستعانة بالأصدقاء والأقارب	□	□	□
الاستعانة بمكاتب الخدمات المتواجدة خارج الدوائر الحكومية	□	□	□

23. ماهي وسائل المساعدة التي تفضل أن تستعين بها (في حال توفرها) اذا واجهتك مشكلة عند إجراء تعاملات حكومية إلكترونية.

	افضلها بشدة	افضلها الى حد ما	لا افضلها
الاتصال بخدمة العملاء في الجهه الحكومية هاتفياً	□	□	□
استخدام المحادثة الالكترونية المباشرة مع خدمة العملاء (محادثة فورية)	□	□	□
ارسال ايميل للجهه الحكومية	□	□	□
تصفح اجوبة الاسئلة المتكررة (FAQ) في الموقع الالكتروني للجهه الحكومية	□	□	□
البحث عن حل المشكلة في الانترنت	□	□	□
الاستعانة بشخص سبق وان اجرى نفس الخدمة الالكترونية	□	□	□

24. ماهي درجة تأثير وسائل الدعاية التالية على زيادة رغبتك في استخدام انظمة الحكومة الالكترونية في انجاز معاملاتك.

	مؤثرة كثيراً	مؤثرة الى حد ما	لا اعلم او محايد	غير مؤثرة الى حد ما	غير مؤثرة اطلاقاً
الاعلانات عبر وسائل التواصل الاجتماعي	□	□	□	□	□
الاعلانات الموجوده في مواقع الوزارات والجهات الحكومية	□	□	□	□	□
الاعانات عبر الصحف والمجلات	□	□	□	□	□
الاعلانات عبر التلفزيون واذاعات الراديو	□	□	□	□	□
اللوحات والاعلانات في الاماكن العامة	□	□	□	□	□
الاعلانات عبر رسائل البريد الالكتروني او رسائل الجوال	□	□	□	□	□

الجزء الرابع – باستخدام المقياس التالي من 1 – 5 أرجو وضع دائرة حول الرقم الذي يعبر عن مدى موافقتك على العبارات التالية والتي تتعلق بالعوامل التي تؤثر على استخدامك لأنظمة الحكومة الإلكترونية. في اجاباتك ارجو مقارنة التعاملات الالكترونية عبر الانترنت مع الطرق التقليدية مثل مراجعة الدوائر الحكومية شخصياً أو الاستعانة بمكاتب الخدمات.

1 = أوافق بشده
2 = أوافق
3 = لا أعلم أو محايد
4 = لا أوافق
5 = لا أوافق بشدة

25. الرغبة في استخدام أنظمة التعاملات الحكومية الإلكترونية		أوافق بشده				لا أوافق بشده
أ-	لدي الرغبة في إستخدام أنظمة الحكومة الإلكترونية في جميع تعاملاتي الحكومية	1	2	3	4	5
ب-	لا أمانع في تعلم كيفية استخدام أنظمة التعاملات الحكومية الإلكترونية للحصول على خدمات وإنجاز معاملات حكومية	1	2	3	4	5

26. مدى جاهزية أنظمة الحكومة الإلكترونية		أوافق بشده				لا أوافق بشده
أ-	اعتقد أن البنية التحتية الحالية في المملكة العربية السعودية ليست كافية لتطبيق أنظمة حكومية إلكترونية	1	2	3	4	5
ب-	اشعر بأن الجهات الحكومية في المملكة العربية السعودية غير قادرة على تقديم خدمات وتعاملات إلكترونية بشكل مرضي وناجح	1	2	3	4	5

27. الفوائد المتوقعة من أنظمة الحكومة الإلكترونية		أوافق بشده				لا أوافق بشده
أ-	استخدام أنظمة الحكومة الإلكترونية يمكنني من انجاز معاملاتي الحكومية بشكل أسرع	1	2	3	4	5

ب-	اعتقد أن أنظمة الحكومة الإلكترونية سوف تقلل حاجتي الى مراجعة عدة دوائر حكومية لإنهاء معاملاتي	1	2	3	4	5
ت-	استخدام خدمات الحكومة الإلكترونية يوفر وقتي, مالي وجهدي عند إجراء معاملات حكومية	1	2	3	4	5
ث-	استخدام أنظمة الحكومة الإلكترونية سوف يقلل من اعتمادي على الغير مثل الأصدقاء, الأقارب مكاتب الخدمات والمعقبين في إجراء بعض المعاملات الحكومية	1	2	3	4	5
ج-	اعتقد أن تطبيق الأنظمة الإلكترونية في التعاملات الحكومية سوف يقلل من الإجراءات التي قد تؤخر إنهاء بعض معاملاتي الحكومية مثل كتابة معروض أو تصديق مستندات	1	2	3	4	5
ح-	اعتقد أن تطبيق الأنظمة الإلكترونية في التعاملات الحكومية سوف يضمن المساواه في إنجاز معاملات المستخدمين	1	2	3	4	5
خ-	القدرة على إجراء معاملاتي الحكومية إلكترونياً في أي وقت (24ساعة/7 أيام) سوف يشجعني على استخدامها أكثر	1	2	3	4	5

28. تأثير الجوانب الثقافية والإجتماعية على استخدام الحكومة الإلكترونية		أوافق بشده				لا أوافق بشده
أ-	استخدام الخدمات الحكومية الإلكترونية يجعلني أكثر تطوراً ويحسن نظرة الآخرين لي	1	2	3	4	5
ب-	استخدام أفراد عائلتي وأصدقائي للخدمات الحكومية الإلكترونية سوف يشجعني على استخدامها وإنهاء معاملاتي إلكترونياً	1	2	3	4	5
ت-	اعتقد أن تطبيق الأنظمة الإلكترونية في التعاملات الحكومية سوف يقلل من تأثير العلاقات الشخصية (الواسطة) في بعض التعاملات الحكومية	1	2	3	4	5
ث-	اعتقد أن التعامل مع الدوائر الحكومية لإنهاء المعاملات وجهاً لوجه أفضل من التعامل معها إلكترونياً	1	2	3	4	5
ج-	استخدام أنظمة التعاملات الحكومية الإلكترونية سوف يحد من التأثير السلبي لبعض الموظفين الغير متعاونين على إجراء معاملاتي	1	2	3	4	5
ح-	أفضل زيارة الدوائر الحكومية لمتابعة معاملاتي أكثر من متابعتها إلكترونياً	1	2	3	4	5
خ-	أفضل أن أستعين بمكاتب الخدمات العامة والمعقبين لإجراء معاملاتي الحكومية بدلاً من إنجازها إلكترونياً	1	2	3	4	5

29. تأثير الجوانب المعرفية بالأنظمة الحكومية الإلكترونية على استخدامك		أوافق بشده				لا أوافق بشده
أ-	اعتقد أني أملك معرفة جيدة عن إمكانيات, مميزات وخدمات أنظمة الحكومة الإلكترونية في المملكة العربية السعودية	1	2	3	4	5
ب-	أجد أنه من السهل معرفة ما إذا التعاملات الحكومية التي ارغب في إجرائها متوفرة إلكترونياً أم لا	1	2	3	4	5
ت-	توفر ورش عمل وعروض مرئية عن إمكانيات وخدمات الحكومة الإلكترونية سوف يشجعني على حضورها ومعرفة المزيد عنها	1	2	3	4	5
ث-	أنا راضي عن حملات التوعية والدعايات التي تهدف لنشر مفهوم الحكومية الإلكترونية في المملكة العربية السعودية	1	2	3	4	5

30. جوانب متعلقة بجودة الخدمات والتعاملات الإلكترونية					أوافق بشده	لا أوافق بشده
أ-	اشعر بأن الخدمات الحكومية الإلكترونية الحالية عالية الجودة	1	2	3	4	5
ب-	اعتقد أن خدمات البريد الحالية في السعودية موثوقة وسريعة في حال استخدمتها لإرسال واستقبال معاملاتي ومستنداتي من وإلى الدوائر الحكومية	1	2	3	4	5
ت-	اعتقد أن نظام سداد كافي لاستخدامه في دفع رسوم المعاملات والخدمات	1	2	3	4	5
ث-	وجود أخطاء تقنية مثل (روابط لا تعمل, صفحات تحت الإنشاء, خطأ في السيرفر ....الخ) عند استخدامي لأنظمة الحكومة الإلكترونية سوف يقلل من رغبتي في إجراء معاملاتي إلكترونياً	1	2	3	4	5

31. جوانب متعلقة بسهولة وبساطة استخدام أنظمة الحكومة الإلكترونية					أوافق بشده	لا أوافق بشده
أ-	اشعر بأن استخدام الخدمات والتعاملات الحكومية الإلكترونية أمر سهل	1	2	3	4	5
ب-	اجراء خدمات ومعاملات حكومية الكترونياً يتطلب مني الكثير من التركيز والجهد لتجنب رفضها	1	2	3	4	5
ت-	اشعر بأن أنظمة التعاملات الحكومية الإلكترونية تسهل للمستخدمين إجراء الخدمات والمعاملات الحكومية التي يحتاجونها	1	2	3	4	5
ث-	التصميم الغير جذاب لصفحات الخدمات الحكومية الإلكترونية سوف يؤثر سلباً على رغبتي في استخدامها لإجراء معاملاتي	1	2	3	4	5
ج-	اعتقد أن وجود مكاتب رسمية منتشرة لمساعدة المستخدمين على إجراء خدمات وتعاملات حكومية الكترونية فكرة جيدة (مثل المساعده في تقديم الطلب, ارسال واستقبال المعاملات والمستندات ....الخ)	1	2	3	4	5
ح-	صعوبة الوصول إلى روابط الخدمات الحكومية الإلكترونية التي احتاجها عبر الانترنت سوف يقلل من رغبتي في إجراء معاملاتي إلكترونياً	1	2	3	4	5

32. جوانب متعلقة بالثقة في الخدمات الإلكترونية وأمن المعلومات					أوافق بشده	لا أوافق بشده
أ-	أشعر أن الانترنت غير آمن للتعامل مع الجهات الحكومية	1	2	3	4	5
ب-	اشعر بأن أنظمة الحكومة الإلكترونية ذات بيئة آمنة يمكنني إجراء تعاملاتي الحكومية من خلالها بشكل آمن	1	2	3	4	5
ت-	سوف أتردد في تزويد أنظمة التعاملات الحكومية الإلكترونية بمعلوماتي المالية مثل معلومات الحساب البنكي أو بطاقات الإئتمان	1	2	3	4	5
ث-	سوف أتردد في تزويد أنظمة التعاملات الحكومية الإلكترونية بمعلومات شخصية مثل عنواني, دخلي الشهري, حالتي الإجتماعية .....الخ	1	2	3	4	5
ج-	أشعر بأن بياناتي المخزنة في أنظمة الحكومة الإلكترونية يمكن استخدامها بواسطة أطراف أخرى بدون معرفتي	1	2	3	4	5
ح-	أشعر بأن بياناتي المخزنة في أنظمة الحكومة الإلكترونية يمكن أن يساء استخدامها	1	2	3	4	5
خ-	يمكن الوثوق بالجهات الحكومية في تنفيذ معاملات وخدمات الكترونية موثوقة بشكل ناجح	1	2	3	4	5

الجزء الخامس–أرجو تحديد درجة أهمية وجود العناصر التالية بالنسبة لك عند تطبيق أنظمة التعاملات الحكومية الإلكترونية

33. درجة أهمية وجود المعلومات التالية في مواقع الحكومة الإلكترونية	درجة الأهمية				
	عالية جداً	عالية	متوسطة	منخفضة	منخفضة جداً
	1	2	3	4	5
أ- خطوات مفصلة عن كيفية إجراء الخدمات الحكومية إلكترونياً	☐	☐	☐	☐	☐
ب- أمثلة مكتوبة أو مصورة عن المتطلبات الواجب توفرها لإنجاز معاملتك	☐	☐	☐	☐	☐
ت- شرح الإجراءات التي سوف تتم على معاملتك	☐	☐	☐	☐	☐
ث- الوقت المتوقع لإنهاء معاملتك	☐	☐	☐	☐	☐
ج- الوقت المتوقع أن تستغرقه لتقديم طلبك	☐	☐	☐	☐	☐
ح- تاريخ آخر تحديث لصفحات مواقع التعاملات الحكومية الإلكترونية	☐	☐	☐	☐	☐
خ- تاريخ آخر معاملة تمت بواسطة مستخدمين آخرين	☐	☐	☐	☐	☐
د- السياسة المتبعة في أمن المعلومات	☐	☐	☐	☐	☐
ذ- الإجراءات والسياسات المتبعة لحماية خصوصية المستخدمين وتعاملاتهم	☐	☐	☐	☐	☐
ر- التشريعات القانونية المتعلقة بحفظ حقوق المستخدمين والجهه المقدمة للخدمة الإلكترونية	☐	☐	☐	☐	☐

34. درجة أهمية وجود المميزات التالية في تطبيق أنظمة الحكومة الإلكترونية	درجة الأهمية				
	عالية جداً	عالية	متوسطة	منخفضة	منخفضة جداً
	1	2	3	4	5
أ- القدرة على متابعة حالة معاملاتي الحكومية التي أجريتها إلكترونياً	☐	☐	☐	☐	☐
ب- القدرة على استعراض جميع التعاملات الحكومية التي سبق وأن أجريتها إلكترونياً	☐	☐	☐	☐	☐
ت- القدرة على تقييم جودة التعاملات والخدمات الحكومية التي أجريتها إلكترونياً	☐	☐	☐	☐	☐
ث- القدرة على الوصول إلى جميع بياناتي مع التحكم الكامل في وجودها أو حذفها من الأنظمة الإلكترونية	☐	☐	☐	☐	☐
ج- وجود تطبيقات رسمية للهواتف الذكية للتفاعل مع أنظمة الحكومة الإلكترونية واستخدام بعض خدماتها في أي مكان	☐	☐	☐	☐	☐
ح- وجود أجهزة آلية في الأماكن العامة لإجراء بعض الخدمات والتعاملات الحكومية إلكترونياً	☐	☐	☐	☐	☐
خ- التواصل معي بخصوص حالة معاملاتي بواسطة البريد الإلكتروني أو الرسائل النصية	☐	☐	☐	☐	☐

إذا كان هناك أي إضافات بخصوص تطبيق أنظمة الحكومة الإلكترونية في المملكة العربية السعودية والعوامل المؤثرة على استخدامها أرجو التكرم بذكرها

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بحثي هذا سوف يتضمن أيضاً مقابلات شخصية قصيرة تستغرق تقريباً (٣٠ ـ ٤٥ دقيقة) والتي سوف تعطيني الفرصة لمعرفة رأيك في أنظمة الحكومة الإلكترونية في المملكة العربية السعودية والعوامل التي تؤثر على استخدامك لها, أرجو كتابة بريدك الإلكتروني أو رقم جوالك إذا رغبت مشكوراً في المشاركة والمساهمة في نجاح الدراسة لكي أتمكن من التواصل معك وتنسيق المقابلة .....

أكرر شكري على تعاونك ومشاركتك في هذا الإستبيان

صالح الغامدي

University of Sussex

أجندة المقابلة (المواطنين السعوديين)

١ـ هل سبق وأن استخدمت أي خدمات أو تعاملات حكومية إلكترونية في المملكة العربية السعودية؟

(نعم)

٢ـ ماهي ومارأيك فيها بشكل عام؟

٣ـ هل ترى أن استخدام الأنظمة الإلكترونية لإجراء/إنهاء المعاملات والخدمات الحكومية أفضل من الطرق التقليدية كالزيارة الشخصية للجهه الحكومية؟ لماذا؟

٤ـ الرجاء وصف تجاربك في انجاز المعاملات مع الجهات الحكومية الكترونياً؟ وماهي المشاكل التي واجهتها؟

٥ـ من فضلك اشرح باختصار الى اي مدى ترى ان العوامل التالية قد تؤثر على رغبة المواطنين في استخدام الخدمات الحكومية الالكترونيه:

- تأثير عمر المستخدم على استخدامه
- تأثير جنس المستخدم على استخدامه
- تأثير مستوى تعليم المستخدم على استخدامه
- تأثير مكان سكن المستخدم على استخدامه
- تأثير دخل المستخدم على استخدامه

عوامل اخرى:

- تأثير حملات التوعية على استخدام المواطنين
- تأثير الحملات التسويقيه للخدمات الالكترونية على استخدام المواطنين
- تأثير سهولة استخدام الخدمات الالكترونية على استخدام المواطنين
- تأثير سهولة الوصول للخدمات الالكترونيه على استخدام المواطنين

٦ـ في رأيك، ماهي الاسباب والعوامل التي تشجع او تزيد من رغبة المواطنين في استخدام الخدمات الحكومية الالكترونية؟

٧ـ وماهي الاسباب والعوامل التي قد تمنع او تقلل من رغبتهم في استخدامها؟

٨ـ من وجهة نظرك، هل ترى ان للعوامل الاجتماعيه والثقافيه للمجتمع السعودي تأثير على رغبة المستخدمين في استخدام الخدمات الحكومية الالكترونية؟ (عوامل اجتماعيه وثقافيه مثل: التأثر باستخدام الغير، مدح/انتقاد الاخرين عند الاستخدام، التردد/التخوف من استخدام التقنيه والخدمات الالكترونية)

٩ـ هل ترى ان وضع قوانين، سياسات واحكام لاستخدام الخدمات الحكومية الالكترونيه يؤثر على رغبة المستخدمين في استخدامها؟ هل سوف تقرأ هذه السياسات والاحكام اذا كانت موجودة؟

١٠ـ كيف ترى تأثير الخدمات المسانده على رغبة المستخدمين في استخدام الخدمات الحكومية الالكترونية؟ (الخدمات المسانده مثل: خدمات البريد السعودي لتوصيل المستندات، خدمات الدفع الالكتروني)

هل يوجد اضافات تود ان تضيفها عن استخدام الخدمات الحكومية الالكترونية؟

(لا)

١١ـ ماهي اسباب عدم استخدامك للخدمات الحكومية الالكترونية؟

١٢ـ برأيك، ماذا يجب ان تفعل الوزارات والجهات الحكومية لكي تشجعك على استخدام الخدمات والتعاملات الالكترونية؟

Appendix E: Data collection documents for the government employees' sample (English and Arabic versions)

University of Sussex

I am a PhD research student at the University of Sussex, Informatics Department and I am conducting a study to investigate and analyse factors that influence users' adoption and utilisation of e-Government systems in Saudi Arabia. The research title is:

Key Factors Influencing the Adoption and Utilisation of E-Government systems in Saudi Arabia.

You are invited to take part in this research study because you are a governmental employee either you are currently using e-Government systems in your job to process e-Transactions or not. Before you decide whether or not to take part, it is important for you to understand why the research is being done and what it will involve. Please take time to read the following information carefully.

E-Government means the utilisation of various Information and Communication Technologies (ICTs) for facilitating the communications between government and beneficiaries (citizens, business sector and between different governmental agencies); providing effective, efficient and integrated e-Services; enhancing the relationship between the government and beneficiaries throw multiple and flexible channels leading to more participation and engagement.

One of the most important elements of implementing E-Government systems is the interaction between users and E-Government systems. This interaction element is considered the main method that can measure the utilisation and success of E-Government systems. Therefore, this research will investigate and analyse factors that can influence the adoption and utilisation of e-Government in Saudi Arabia based on a framework that has been developed in this research for this purpose.

The study involves group of samples and this part of the study is targeting governmental employees who their jobs have/have not involved the use of e- Government systems to deal with customers' transactions. Your participation is highly appreciated and will contribute to the success of this study which aims to understand the factors that influence the utilisation of e-Government systems in Saudi Arabia.

Participation should not take more than 20 minutes of your time to complete a 66-item questionnaire. The questionnaire designed for this study comprises several sections. The first section contains general information questions while the second section collects information about your proficiency in using computer and the Internet; also collect information about your e-Government usage in processing customers' transactions. The third section assesses your agreement degree on statements related to factors that might affect your e-Government usage in your job. The fourth section measures the importance degree of the existence of some properties while using e-Government systems in your job. Returning the completed questionnaire implies your consent to participate.

My research also involves short interviews (approximately 30-45 minutes) which will give me the opportunity to know more about your opinion on implementing e-Government in Saudi Arabia and the factors that may influence its utilisation. If you are interested to participate in the interview, you can participate straightaway after completing the questionnaire or another time that is convenient to you can be arranged. You will be asked to sign a consent form and you have the option to participate in the questionnaire only or to participate in both the questionnaire and the interview.

Your participation is voluntary, it is up to you to decide whether to take part or not. If you decide to take part you should keep this information sheet for your record. If you decide to take part you are still free to withdraw at any time and without giving a reason. All data collected for this study will be kept strictly confidential. All data will be anonymised and pseudonyms will be used in the transcripts of the interviews to maintain the participants privacy. The results of this study will be analysed and used in my research thesis. If you would like to have a copy of the results, contact me at my email address presented below.

This research has been approved by the Sciences and Technology Cross-Schools Research Ethics Committee (C-REC).

Contact point for further information:
Researcher: Saleh Alghamdi
E-mail: sa434@sussex.ac.uk
Phone: +44 7790008811

If you have any concern about the way in which the study has been conducted, you could contact my supervisor and the ethics committee (C-REC):

Dr Natalia Beloff E-mail: N.Beloff@sussex.ac.uk Phone: +44 (0) 1273 678919 Department of Informatics University of Sussex Falmer, Brighton BN1 9QJ
Ethics Committee (C-REC): crecscitec@sussex.ac.uk

Thank you for taking time to read the information sheet
Date:

University of Sussex

Please note that the term "customers' transactions" refers to the governmental transactions related to individuals or business sector.

First section: General information
Please answer the following questions by choosing the right answers that apply to you:

1. **What is your age?**
   - 18 - 30
   - 31 - 45
   - 46 - 60
   - Over 60

2. **What is your education level?**
   - Was not educated in school
   - Secondary school or less
   - Diploma
   - Bachelor degree
   - Master degree
   - Doctorate or higher

3. **Which of the following best describes the type of area your organisation is based in?**
   - Village
   - Small city
   - Large city

4. **What is the nature of your governmental job?**
   - Management
   - Data entering
   - Customer service
   - Import and export
   - Financial accounting
   - Other ……

5. **Does your job involve making decision on customers' transactions?**
   - Yes
   - No

6. **What is your monthly income that you gain from your organisation?**
   - Less than 5000 SR
   - 5000 – 10000 SR
   - 10001 – 15000 SR
   - 15001 – 20000 SR
   - 20001 – 25000 SR
   - More than 25000 SR

Second section: Information about your proficiency in using computer and the Internet, also about your e-Government usage in processing customers' transactions.
Please answer the following questions by choosing the right answers that apply to you:

7. **Describe your proficiency of using computer?**
   - Low
   - Average
   - Good
   - Excellent
8. **How usually do you use the Internet?**
   - Everyday
   - Several days a week

- Several days a month
- I do not use the Internet

9. **Does your job currently involve any use of e-Government systems to process customers' transactions?**
   - Yes
   - No (move to questions 14)

10. **How do you rate your experience of using e-Government systems in your job to process customers' transactions in general?**
    - Very satisfactory (move to question 12)
    - Satisfactory to some extent
    - Not satisfactory

11. **What are the reasons for not fully satisfied with the use of e-Government systems in your job?** (You can choose more than one answer)
    - ☐ The way of using e-Government in my job is not always clear
    - ☐ It is difficult to use e-Government systems to process customers' transactions
    - ☐ The available technical infrastructure such as computers and network is not efficient
    - ☐ Other ……..

12. **Do you prefer to continue using e-Government systems in your job?**
    - Yes
    - No

13. **Has your organisation provided enough training courses or workshops to train you/increase your awareness on using e-Government systems in your job?**
    - Yes
    - No

14. **Have you ever performed any online transactions in your daily life such as online purchasing and online banking?**
    - Yes
    - No (move to the third section)

15. **Will the previous experience of performing online transactions in your daily life affect your willingness to use e-Government systems in your job?**
    - Yes, positively
    - Yes, negatively
    - No, it will not affect

Third section: Information related to factors that may influence your e-Government usage in your job to process customers' transactions.

Please indicate your opinion about the following statements by circling the number which best represent your choice.

1= Strongly agree
2= Agree
3= I do not know or neutral
4= Disagree
5= Strongly disagree

16. Statements about your willingness to use e-Government systems in your job	Strongly agree				Strongly disagree
a. I intend to use e-Government systems in my work to process customers' transactions	1	2	3	4	5
b. I do not mind to deal with customers electronically with regards their government transactions	1	2	3	4	5
c. I do not mind to deal with my colleagues, my managers and other employees electronically	1	2	3	4	5
d. I prefer using e-Government systems to process customers' transactions more than using paper-based method	1	2	3	4	5

17. Statements about the e-Readiness of e-Government systems to process customers' transactions	Strongly agree				Strongly disagree
a. I think the current infrastructure in Saudi Arabia is not efficient to provide reliable e-Government services to customers	1	2	3	4	5
b. The current potential in my organisation (including the used technologies, fund and qualified personnel) are not enough to implement e-Government system successfully	1	2	3	4	5
c. I feel that the organisation that I work for is not currently able to provide electronic services to customers as required	1	2	3	4	5

18. Statement about the expected benefits from using e-Government systems in your job	Strongly agree				Strongly disagree
a. Using e-Government systems would enable me to process customers' transactions quicker than traditional ways (paper-based).	1	2	3	4	5
b. I believe that using e-Government systems in jobs will increase the commitment of the employees in work	1	2	3	4	5
c. I think using e-Government systems in my job will enhance my productivity in processing customers' transactions	1	2	3	4	5
d. Electronic dealing between government agencies will speed up the processing of customers' transactions	1	2	3	4	5

	19. Statements about the influence of social and cultural aspects on using e-Government in your job	Strongly agree				Strongly disagree
a.	Using e-Government systems in my job would make me feel that I am more sophisticated	1	2	3	4	5
b.	Using e-Government systems in my job will enhance other's perceptions about me (my colleagues, my family and my friends)	1	2	3	4	5
c.	I will be eager to use e-Government systems in my job if my colleagues are using them.	1	2	3	4	5
d.	I believe that using e-Government systems to process customers' transactions will increase the employees' self-monitoring	1	2	3	4	5
e.	I prefer dealing with customers face to face more than dealing with them electronically through e-Government systems.	1	2	3	4	5
f.	I believe that implementing e-Government systems will reduce job opportunities in the public sector.	1	2	3	4	5
g.	Transforming to e-Government systems in the public sector makes me feel that I will lose my job one day.	1	2	3	4	5
h.	Processing transactions using e-Government systems and computers would make my job boring.	1	2	3	4	5
i.	Using e-Government systems will reduce my job privileges such as making a decision on customers' transactions	1	2	3	4	5
j.	I feel that using e-Government systems to process customers' transactions will put me under pressure since my performance can be viewed and monitored.	1	2	3	4	5

	20. Statements about the awareness of using e-Government systems in governmental jobs to process customers' transactions	Strongly agree				Strongly disagree
a.	I feel that I have a good knowledge about benefits and advantages of using e-Government in my job.	1	2	3	4	5
b.	I believe that low level of the employees' awareness about e-Government potentials will reduce their willingness to use it in their jobs	1	2	3	4	5
c.	Not providing enough training on how to use e-Government systems would reduce the employees' willingness to use such systems in their jobs	1	2	3	4	5
	21. Statements about the quality aspects of using e-Government systems to process customers' transactions.	Strongly agree				Strongly disagree
a.	I feel that e-Government system in my organisation is high quality	1	2	3	4	5
b.	Using e-Government systems would enhance my performance quality in processing customers' transactions	1	2	3	4	5
c.	I think that using e-Government systems would prevent job mistakes that might occur with traditional paper work.	1	2	3	4	5

d.	I think that the Saudi post mail services are fast and reliable for correspondence with customers regarding to their e-Transactions	1	2	3	4	5
e.	I think SADAD system is sufficient and effective to be used with costumers' payment for their transactions	1	2	3	4	5
f.	I will be happy if customers can evaluate my job performance when processing their Transactions	1	2	3	4	5
g.	Electronic access between related government agencies would enhance the performance and speed of processing customers' transactions	1	2	3	4	5
h.	The emergence of alert/confirmation messages when using e-Government systems in my work is important for me.	1	2	3	4	5
i.	The existence of technical failure while using e-Government systems in my work would reduce my willingness to use such systems	1	2	3	4	5

22.	**Statements about the simplicity of using e-Government systems in your job to process customers' transactions**	Strongly agree				Strongly disagree
a.	I feel that using e-Government systems to process customers' transactions is easier than using paper-based method.	1	2	3	4	5
b.	Providing help desk that is dedicated to help employees with processing e-Transactions and using e-Government is important for me.	1	2	3	4	5
c.	Providing electronic manual about steps and procedures of processing e-Transactions would make my work on e-Government easier.	1	2	3	4	5
d.	I believe that providing illustrative examples of the e-Transactions requirements would facilitate their processing.	1	2	3	4	5
e.	I believe that providing efficient accessibility tools including computers and network would positively affect on the employees' adoption and willingness to use e-Government.	1	2	3	4	5
f.	The interface design and layout of e-Government internal portals would significantly affect my willingness to use such systems.	1	2	3	4	5

23.	**Statements about the reliability aspects in using e-Government systems in your job to process customers' transactions**	Strongly agree				Strongly disagree
a.	I believe that the Internet is not safe to provide e-Government services to customers through it	1	2	3	4	5
b.	I think e-Government systems can be trusted to be used to process customers' transactions successfully	1	2	3	4	5
c.	I believe that using e-Government systems in my job can be trusted to reserve my employment rights (such as storing my performance safely)	1	2	3	4	5
d.	I feel that using e-Government systems in my work can invade my job privacy	1	2	3	4	5
e.	I feel that using e-Government systems in my work would contribute in reserving my employment rights since all the activities can be logged and regulated.	1	2	3	4	5

f.	I think that applying clear regulations and policies of using e-Government systems in work would enhance the employees' adoption and willingness to use such systems.	1	2	3	4	5
g.	Applying high standards of information security and information privacy policies is important for me when using e-Government systems in my work.	1	2	3	4	5

If you have any additional information related to the Saudi e-Government systems and the factors that influence your usage as employee please write it here

……
……
……

Please provide your contact details if you are interested to participate in the interview (30-45 minutes) at different time so I can arrange a suitable time/place for you to take part.

……
…..

Thank you very much again for your time and your participation
Saleh Alghamdi

University of Sussex

Interview Guide for employees:

1. Does your job involve the use of e-Government systems?
2. Could you please explain your opinion in implementing e-Government systems in public sector to provide and process e-Services and e-Transactions?
3. In your opinion, what are the advantages and benefits of using e-Government systems in processing customers' transactions and completing job tasks?
4. Do you think that using e-Government systems have disadvantages and negative effect on the employees' work and performance?
5. In your opinion, what are the barriers and shortcomings of implementing e-Government systems in Saudi Arabia?
6. Could you please explain briefly the influence of the following factors on the employees' use of e-Government systems?

   (Age, gender, education level, employee's salary, the location of the organisation that the employee works for, the employee's trust on electronic systems, awareness campaigns, training courses, ease of use e-Government systems, technical quality of the tools and electronic systems)
7. In your opinion, what are the factors and reasons that would encourage/increase the employees' willingness to use e-Government systems in their job to process customers' transactions and complete their job's tasks?
8. What are the factors and reasons that would discourage/decrease their willingness to use e-Government systems in their job to process customers' transactions and complete their job's tasks?

Is there anything you would like to add regarding to e-Government implementation, adoption and use in the public sector?

University of Sussex

أنا باحث دكتوراه في جامعة ساسيكس بالمملكة المتحدة، قسم المعلوماتية وبحثي يهتم بدراسة وتحليل العوامل المؤثرة على تبني وإستخدام الخدمات الحكومية الإلكترونية (خدمات وتعاملات الحكومة الإلكترونية) في المملكة العربية السعودية. عنوان البحث هو:

تحليل العوامل المؤثرة على تبني وإستخدام أنظمة وخدمات الحكومة الإلكترونية في المملكة العربية السعودية

أنت مدعو للمشاركة في هذه الإستبانة التي تستهدف الموظفين الحكوميين بغض النظر إذا كان عملك الحالي يتضمن إستخدام أنظمة ومعاملات إلكترونية أم لا. أود في البداية توضيح الهدف من البحث وماذا ستتضمن المشاركة فيه. الحكومة الإلكترونية تعني إستخدام و توظيف تقنيات الإتصالات والمعلومات لتسهيل التواصل والتعامل بين الجهات الحكومية والمستفيدين (مواطنين، قطاع الأعمال أو جهات حكومية أخرى) وذلك بتقديم خدمات وتعاملات إلكترونية متكاملة ذات فعالية وكفاءة عالية مما يساهم في تعزيز التواصل والمشاركة من خلال قنوات متعددة ومرنة.

أحد أهم العناصر في تطبيق الحكومة الإلكترونية هو عنصر التفاعل بين المستخدمين وأنظمة الحكومة الإلكترونية. هذا التفاعل يعتبر من أهم العناصر لقياس مدى تقبل وإستخدام أنظمة وخدمات الحكومة الإلكترونية ومدى نجاحها. لذلك، هذا البحث يدرس ويحلل العوامل التي تؤثر على تبني، تقبل وإستخدام خدمات وتعاملات الحكومة الإلكترونية في المملكة العربية السعودية بناءاً على منهجية طورت في هذا البحث لهذا الغرض. هذا البحث يستهدف مجموعة مختلفة من المستخدمين وهذه الإستبانة تخص وتستهدف الموظفين الحكوميين في المملكة العربية السعودية الذين يتعاملون مع معاملات المراجعين والعملاء. أقدر تماماً مشاركتك في الدراسة والتي ستساهم في نجاح هذا البحث الذي يهدف إلى تحسين وتطوير تطبيق أنظمة الحكومة الإلكترونية بما يتناسب مع متطلبات المستخدمين.

المشاركة في هذه الدراسة تستغرق تقريباً ٢٠ دقيقة للإجابة على الإستبانه التي تحتوي على ٦٦ سؤال. الإستبانه تحتوي على عدة أجزاء وهي كالتالي: الجزء الأول يشمل أسئلة عامة بينما الجزء الثاني يشمل أسئلة عن مهاراتك في إستخدام الكمبيوتر والإنترنت وكذلك أسئلة عن إستخدامك لأنظمة الحكومة الإلكترونية فيما يتعلق بإنجاز معاملات العملاء. الجزء الثالث يقيم مدى تأثير عدد من العوامل على إستخدامك للأنظمة الحكومية الإلكترونية في عملك. الجزء الرابع يقيس أهمية تطبيق بعض الخيارات في الأنظمة الحكومية الإلكترونية. إجابتك على هذه الإستبانه وتسليمها للباحث تعني موافقتك على المشاركة.

البحث أيضاً يشتمل على مقابلات شخصية قصيرة (تقريباً ٣٠ ـ ٤٥ دقيقة) والتي سوف تعطي الفرصة لمعرفة المزيد عن آرائك في تطبيق أنظمة الحكومة الإلكترونية في السعودية والعوامل المؤثرة على إستخدامها. إذا كنت مهتم بالمشاركة في المقابلة، يمكنك المشاركة بعد إكمال الإستبانة مباشرة أو يمكن ترتيب وقت آخر مناسب للمقابلة. سوف يتم طلب توقيعك على نموذج المشاركة في حال قبلت كما أنه يمكنك المشاركة في الإستبانة فقط أو المشاركة في الإستبانة والمقابلة معاً.

مشاركتك تعتبر تطوعية مما يعني أن الخيار لك في المشاركة من عدمها. أرجو الإحتفاظ بورقة المعلومات هذه في حالة الرغبة بالمشاركة. إذا قررت المشاركة في الدراسة، يمكنك الإنسحاب في أي وقت وبدون إعطاء أسباب. جميع البيانات والمعلومات التي سيتم جمعها سوف يتم حفظها بسرية تامة. سوف يتم إخفاء وترميز أي معلومات يمكن من خلالها تحديد هوية المشارك للحفاظ على خصوصية المشاركين. سوف يتم تحليل نتائج هذه الدراسة وإستخدامها لأغراض البحث فقط. إذا أردت مناقشة نتائج هذه الدراسة، لا تتردد في التواصل معي.

تمت الموافقة على إجراء هذه الدراسة من قبل لجنة أخلاقيات بحوث العلوم والتقنية (C_REC) بجامعة ساسيكس.

وسائل التواصل مع الباحث:
صالح الغامدي، البريد الإلكتروني: x.ac.uksa434@susse، رقم الهاتف: 00447790008811

إذا كان لديك أي إستفسارات عن الطريقة التي تمت خلالها هذه الدراسة، يرجى التواصل مع المشرف الأكاديمي أو لجنة أخلاقيات بحوث العلوم والتقنية (C_REC):

الدكتورة ناتاليا بيلوف، البريد الإلكتروني: N.Beloff@sussex.ac.uk, هاتف: 00441273678919
قسم المعلوماتية، جامعة ساسيكس، فالمير، برايتون BN1 9QJ
لجنة أخلاقيات بحوث العلوم والتقنية (C_REC): crecscitec@sussex.ac.uk

شكراً جزيلاً
التاريخ:

University of Sussex

ارجو الملاحظة أن كلمة (معاملات العملاء) في جميع الاسئلة التالية يقصد بها المعاملات الحكومية سواءاً التي تخص المواطنين أو قطاع الأعمال

الجزء الأول – معلومات عامة
أرجو اختيار الإجابة المناسبة للأسئلة التالية:

1. **العمر:**
   - o 18 – 30
   - o 31 – 45
   - o 46 – 60
   - o أكثر من 60
2. **المؤهل العلمي:**
   - o لم يتم التعلم في المدارس
   - o ثانوي أو أقل
   - o دبلوم
   - o بكالوريوس
   - o ماجستير
   - o دكتوراه
3. **وصف المنطقة التي يوجد بها مقر عملك:**
   - o قرية
   - o مدينة صغيره
   - o مدينة كبيره (رئيسية)
4. **ماهو مجال عملك:**
   - o ادارة
   - o ادخال بيانات
   - o خدمة عملاء
   - o مراسل
   - o محاسبة ومالية
   - o اخرى .....
5. **هل مهام عملك تتضمن اتخاذ قرار في قبول او رفض أي معاملة حكومية؟**
   - i) نعم
   - ii) لا
6. **كم هو راتبك الشهري الذي تتقاضاه من الجهه الحكومية التي تعمل بها؟**
   - o اقل من 5000 ريال سعودي
   - o من 5000 الى 10000 ريال سعودي
   - o من 10001 الى 15000 ريال سعودي
   - o من 15001 الى 20000 ريال سعودي
   - o من 20001 الى 25000 ريال سعودي
   - o اكثر من 25000 ريال سعودي

الجزء الثاني – معلومات عن معرفتك للحاسب الآلي واستخدامك للانترنت و الانظمة الإلكترونية في انجاز معاملات العملاء
أرجو اختيار الإجابة المناسبة للأسئلة التالية :

7. **كيف تقيم مستوى معرفتك لاستخدام الحاسب الآلي (الكمبيوتر) بشكل عام؟**
   - o ضعيفة
   - o متوسطة
   - o جيدة
   - o ممتازة

8. كم هو عدد مرات استخدامك للانترنت؟

- o لا استخدم الانترنت
- o كل يوم
- o عدة مرات في الاسبوع
- o عدة مرات في الشهر
- o عدة مرات في السنة

9. هل مهام عملك حالياً تتضمن أي استخدام لانظمة الحكومة الالكترونية في انجاز معاملات العملاء؟

- o نعم
- o لا(انتقل الى سؤال 14)

10. كيف تقيم بشكل عام تجربتك لاستخدام انظمة الحكومة الالكترونية في انهاء المعاملات؟

- o مرضية جداً (انتقل الى سؤال 12)
- o مرضية الى حد ما
- o غير مرضية

11. ماهي أسباب عدم رضاك التام عن تجربتك في استخدام الانظمة الحكومية الالكترونية في انهاء المعاملات؟ (يمكن اختيار اكثر من اجابة)

- □ طريقة استخدامها في انهاء المعاملات غير واضحة تماماً
- □ صعوبة استخدامها في انهاء المعاملات
- □ اجهزة الحاسب الالي المتاحة غير مناسبة
- □ اسباب اخرى .....

12. هل تفضل الاستمرار في استخدام الانظمة الحكومية الالكترونية في انهاء المعاملات؟

- o نعم
- o لا

13. هل الجهه التي تعمل بها قدمت دورات تدريبية وورش عمل كافية لاستخدام انظمة الحكومة الالكترونية في عملك؟

- o نعم
- o لا

14. هل سبق وأن قمت بعمليات الكترونية عبر الانترنت (مثل الشراء عبر الانترنت او الخدمات المصرفية الالكترونية .....الخ)؟

- o نعم
- o لا (انتقل الى الجزء الثالث)

15. هل ستؤثر تجربتك بالقيام بعمليات الكترونية عبر الانترنت على رغبتك في استخدام الانظمة الحكومية الإلكترونية في عملك؟

- o نعم, ايجاباً
- o نعم, سلباً
- o لا, لن تؤثر

الجزء الثالث – معلومات تتعلق بالعوامل التي قد تؤثر على استخدامك للانظمة الحكومية الإلكترونية في إنهاء المعاملات.

باستخدام المقياس التالي من 1 – 5 أرجو وضع دائرة حول الرقم الذي يعبر عن مدى موافقتك على العبارات التالية. في اجاباتك ارجو مقارنة استخدام الأنظمة الالكترونية للقيام بإنهاء المعاملات مع الطرق التقليدية مثل التعامل الورقي.

1 = أوافق بشده
2 = أوافق
3 = لا أعلم أو محايد
4 = لا أوافق
5 = لا أوافق بشدة

16. الرغبة في استخدام أنظمة الحكومة الالكترونية في انهاء المعاملات		أوافق بشده				لا أوافق بشده
أ-	لدي الرغبة في إستخدام انظمة الحكومة الالكترونية في إنهاء معاملات العملاء	1	2	3	4	5
ب-	لا أمانع في التعامل مع المراجعين من افراد وقطاع خاص الكترونياً عبر الانترنت فيما يخص معاملاتهم	1	2	3	4	5
ت-	لا امانع في التعامل مع الموظفين والمدراء في جهة عملي الكترونياً	1	2	3	4	5
ث-	افضل استخدام الانظمة الحكومية الالكترونية لانجاز معاملات العملاء اكثر من استخدام الطرق الورقية التقليدية	1	2	3	4	5

35. مدى جاهزية أنظمة الحكومة الالكترونية لانهاء معاملات العملاء		أوافق بشده				لا أوافق بشده
أ-	اعتقد أن البنية التحتية الحالية في المملكة العربية السعودية ليست كافية لتقديم خدمات حكومية الكترونية موثوقة للعملاء من افراد وقطاع اعمال	1	2	3	4	5
ب-	اشعر بأن الجهة الحكومية التي اعمل بها غير قادرة حالياً على تقديم خدمات الكترونية للعملاء بالشكل المطلوب	1	2	3	4	5
ت-	الامكانيات التقنية الموجودة حالياً في جهة عملي (مثل اجهزة الحاسب الالي, السيرفرات,الانظمة الالكترونية, موظفين تقنية المعلومات مؤهلين) غير كافية لتطبيق الخدمات الحكومية الالكترونية بشكل ناجح	1	2	3	4	5

36. الفوائد المتوقعة من استخدام الانظمة الحكومية الالكترونية في انهاء المعاملات		أوافق بشده				لا أوافق بشده
أ-	استخدام أنظمة الحكومة الإلكترونية يمكنني من انهاء المعاملات بشكل أسرع من الطرق التقليدية الورقية	1	2	3	4	5
ب-	اعتقد ان استخدام الانظمة الحكومية الالكترونية في انهاء المعاملات سوف يزيد من التزام الموظفين بالعمل	1	2	3	4	5
ت-	اعتقد ان استخدام الانظمة الحكومية الالكترونية في انهاء المعاملات سوف يزيد من انتاجيتي في العمل	1	2	3	4	5
ث-	اعتقد ان التعامل الالكتروني بين الجهات الحكومية سوف يزيد من سرعة انجاز المعاملات	1	2	3	4	5

37. تأثير الجوانب الثقافية والاجتماعية على استخدام الانظمة الحكومية الالكترونية لانهاء المعاملات		أوافق بشدة				لا أوافق بشدة
أ-	استخدام الأنظمة الحكومية الالكترونية في إنهاء المعاملات سوف يشعرني بالتطور	1	2	3	4	5
ب-	استخدام الأنظمة الحكومية الالكترونية في مهام عملي سوف يحسن من نظرة الاخرين لي (الموظفين, الاقارب والاصدقاء)	1	2	3	4	5
ت-	استخدام زملائي في العمل للانظمة الحكومية الالكترونية سوف يزيد من رغبتي في استخدامها في مهام عملي	1	2	3	4	5
ث-	اعتقد ان تطبيق الانظمة الالكترونية في الجهات الحكومية سوف يزيد من المراقبة الذاتية للموظفين	1	2	3	4	5
ج-	افضل التعامل مع العملاء وجهاً لوجه لانجاز معاملاتهم اكثر من التعامل معهم و مع معاملاتهم من خلال الانظمة الالكترونية	1	2	3	4	5
ح-	اعتقد ان تطبيق انظمة الحكومة الالكترونية سوف يقلل من الفرص الوظيفية في القطاع الحكومي	1	2	3	4	5
خ-	التحول الى التعامل الالكتروني في المعاملات الحكومية يشعرني بانني سوف افقد وظيفتي في يومٍ ما	1	2	3	4	5
د-	انجاز معاملات العملاء باستخدام الانظمة الالكترونية والحاسب الالي فقط امر ممل	1	2	3	4	5
ذ-	استخدام الانظمة الحكومية الالكترونية في عملي سوف يقلل من امتيازاتي الوظيفية (مثل اتخاذ القرار في معاملة معينة)	1	2	3	4	5
ر-	إمكانية استعراض أدائي الوظيفي من قبل المسئولين الكترونياً يضعني تحت الضغط النفسي	1	2	3	4	5

38. جوانب المعرفة المتعلقة باستخدام الأنظمة الحكومية الالكترونية لانهاء المعاملات		أوافق بشدة				لا أوافق بشدة
أ-	اعتقد أني أملك معرفة جيدة عن إمكانيات ومميزات استخدام الانظمة الحكومية الالكترونية في عملي	1	2	3	4	5
ب-	اعتقد ان عدم نشر الوعي بمميزات وفوائد تطبيق انظمة الحكومة الالكترونية سوف يقلل من رغبة الموظفين في استخدامها في انهاء المعاملات	1	2	3	4	5
ت-	اعتقد ان عدم تقديم دورات تدريبية للموظفين على استخدام الانظمة الحكومية الالكترونية سوف يقلل من رغبتهم في استخدام الانظمة الالكترونية في انهاء المعاملات	1	2	3	4	5

39. جوانب متعلقة بجودة انجاز المعاملات عن طريق استخدام الانظمة الحكومية الالكترونية		أوافق بشدة				لا أوافق بشدة
أ-	اشعر بأن الأنظمة الالكترونية الموجودة في جهة عملي ذات جودة عالية	1	2	3	4	5
ب-	استخدام الأنظمة الحكومية الالكترونية سوف يحسن من جودة عملي في انجاز المعاملات	1	2	3	4	5

ت-	تطبيق الانظمة الحكومية الالكترونية سوف يمنع من حدوث اخطاء في مهام العمل والتي يمكن ان تحدث في التعامل الورقي	1	2	3	4	5
ث-	خدمات البريد السعودي الحالية موثوقة وكافية في حال تم استخدامها لارسال واستقبال الاوراق والمستندات الخاصة بالمعاملات الالكترونية للعملاء	1	2	3	4	5
ج-	اعتقد أن نظام سداد كافي لاستخدامه من قبل العملاء في دفع رسوم معاملاتهم الالكترونية	1	2	3	4	5
ح-	وجود أخطاء تقنية عند استخدامي للانظمة الحكومية الإلكترونية في انهاء المعاملات سوف يقلل من رغبتي في استخدام تلك الانظمة	1	2	3	4	5
خ-	ظهور رسائل تنبيه/تأكيد عند إستخدام أنظمة الحكومة الإلكترونية في عملي أمر مهم بالنسبة لي	1	2	3	4	5
د-	لا امانع في امكانية تقييم ادائي الوظيفي وجودة عملي من قبل العملاء الكترونياً	1	2	3	4	5
ذ-	ارتباط الجهات الحكومية الكترونياً بعضها ببعض سوف يزيد من جودة وسرعة انجاز المعاملات	1	2	3	4	5

40. جوانب متعلقة بسهولة استخدام الانظمة الحكومية الالكترونية في انهاء المعاملات		أوافق بشدة				لا أوافق بشدة
أ-	أشعر بأن استخدام الانظمة الحكومية الالكترونية في انجاز المعاملات أسهل من إستخدام الطرق الورقية	1	2	3	4	5
ب-	وجود قسم متخصص لمساعدة الموظفين عند إستخدام الأنظمة الحكومية الإلكترونية في إنجاز المعاملات أمر مهم بالنسبة لي	1	2	3	4	5
ت-	وجود شرح مفصل لخطوات واجراءات انجاز معاملات العملاء الكترونياً سوف يجعل إستخدامي للأنظمة الإلكترونية أسهل	1	2	3	4	5
ث-	اعتقد وجود امثلة مكتوبة ومصورة للمتطلبات الواجب توفرها عند انجاز معاملات العملاءسوف يسهل عملية إنجازها	1	2	3	4	5
ج-	اعتقد وجود إمكانات وأدوات وصول فعالة (تشمل أجهزة كمبيوتر محدثة وشبكات فعالة) في الجهات الحكومية سوف تؤثر إيجاباً على رغبة الموظفين في إستخدام الأنظمة الحكومية الإلكترونية	1	2	3	4	5
ح-	تصميم واجهات وصفحات الانظمة الحكومية الالكترونية سوف يؤثر بشكل كبير على رغبتي في استخدامها لانجاز المعاملات	1	2	3	4	5

41. جوانب متعلقة بالثقة وامن المعلومات في استخدام الانظمة الحكومية الالكترونية لانهاء المعاملات		أوافق بشدة				لا أوافق بشدة
أ-	اعتقد أن الانترنت غير آمن لتقديم خدمات حكومية الكترونية للعملاء	1	2	3	4	5
ب-	يمكن الوثوق بالأنظمة الحكومية الالكترونية في انجاز معاملات العملاء بشكل ناجح	1	2	3	4	5
ت-	يمكن الوثوق بالأنظمة الحكومية الالكترونية في حفظ حقوقي الوظيفية (مثل حفظ أدائي الوظيفي بشكل آمن)	1	2	3	4	5
ث-	اشعر ان استخدام الانظمة الحكومية الالكترونية قد يتسبب في انتهاك خصوصية عملي	1	2	3	4	5
ج-	أشعر ان استخدام الانظمة الحكومية الإلكترونية في عملي سوف يساهم في تنظيم جميع الأنشطة وحفظها وبالتالي يضمن حقوقي الوظيفية	1	2	3	4	5

ح-	اعتقد ان تطبيق قوانين وتشريعات وسياسات واضحة لإستخدام انظمة الحكومة الإلكترونية في العمل سوف يزيد من رغبة الموظفين في إستخدامها	1	2	3	4	5
خ-	تطبيق معايير عالية لسياسات أمن المعلومات وسياسات حفظ الخصوصية أمر مهم بالنسبة لي عند استخدام انظمة الحكومة الإلكترونية في عملي	1	2	3	4	5

إذا كان هناك أي إضافات بخصوص العوامل التي قد تؤثر على استخدام الموظفين للانظمة الحكومية الالكترونية لانهاء معاملات العملاء الرجاء ذكرها هنا

.....

.....

بحثي هذا سوف يتضمن أيضاً مقابلات شخصية قصيرة تستغرق تقريباً (٣٠ ـ ٤٥ دقيقة) والتي سوف تعطيني الفرصة في معرفة المزيد عن رأيك في الأنظمة الحكومية الإلكترونية في المملكة العربية السعودية وكذلك العوامل التي تؤثر على استخدامك لها في إنهاء مهام العمل ومعاملات العملاء, أرجو كتابة بريدك الإلكتروني أو رقم هاتفك إذا رغبت مشكوراً في المشاركة والمساهمة في نجاح الدراسة لكي أتمكن من التواصل معك وتنسيق المقابلة .....

أكرر شكري على تعاونك ومشاركتك في هذا الاستبيان

صالح الغامدي

أجندة المقابلة (الموظفين الحكوميين)

١ـ هل مهام عملك في انجاز المعاملات تتضمن التعامل مع الانظمه الحكوميه الالكترونيه؟

٢ـ ما رأيك في تطبيق الانظمه الالكترونيه في الجهات الحكوميه لانجاز معاملات وتقديم خدمات للمستفيدين؟

٣ـ من وجهة نظرك، ماهي الفوائد والمميزات التي تعود على عمل الموظف عند استخدام الانظمه الالكترونيه في انجاز المعاملات؟

٤ـ هل ترى ان استخدام الانظمه الحكوميه الالكترونيه له مضار او عيوب على اداء وعمل الموظف؟

٥ـ من وجهه نظرك، ماهي العوائق في تطبيق الانظمه الالكترونيه لتقديم خدمات وانجاز معاملات حكوميه؟

٦ـ من فضلك اشرح باختصار الى اي مدى ترى ان العوامل التالية قد تؤثر على استخدام الموظفين للانظمه الالكترونيه في انجاز المعاملات:

- تأثير عمر الموظف على استخدامه
- تأثير جنس الموظف على استخدامه
- تأثير مستوى تعليم الموظف على استخدامه
- تأثير الموقع الجغرافي لمقر العمل
- تأثير دخل الموظف على استخدامه
- تأثير ثقة الموظف بالانظمه الالكترونيه

عوامل اخرى:

- تأثير التوعية بفوائد ومميزات استخدام الانظمه الالكترونيه في العمل
- تأثير الدورات التدريبيه على استخدام الانظمه الالكترونيه في العمل
- تأثير سهولة استخدام الانظمه الالكترونية في العمل
- تأثير الجودة التقنيه للانظمه الحكوميه الالكترونيه
- تأثير توفير حواسيب واجهزه حديثه ومتطوره

٧ـ في رأيك، ماهي الاسباب والعوامل التي تشجع او تزيد من رغبة الموظفين في استخدام الانظمه الالكترونية لانجاز المعاملات وانهاء مهام العمل؟

٨ـ وماهي الاسباب والعوامل التي قد تمنع او تقلل من رغبتهم في استخدامها؟

هل يوجد اضافات تود ان تضيفها عن تطبيق الخدمات الحكومية الالكترونية؟

Appendix F: Data collection documents for the business sector's sample (English and Arabic versions)

US
University of Sussex

I am a PhD research student at the University of Sussex, Informatics Department and I am conducting a study to investigate and analyse factors that affect users' adoption and utilisation of online services and transactions provided by e-Government systems in Saudi Arabia. The research title is:

Key Factors Influencing the Adoption and Utilisation of E-Government systems in Saudi Arabia.

You are invited to take part in this research study because you are a business owner or a business representative in Saudi Arabia either you are currently using e-Government systems to perform transactions for your business or not. Before you decide whether or not to take part, it is important for you to understand why the research is being done and what it will involve. Please take time to read the following information carefully.

E-Government means the utilisation of various Information and Communication Technologies (ICTs) for facilitating the communications between government and beneficiaries (citizens, business sector and between different governmental agencies); providing effective, efficient and integrated e-Services; enhancing the relationship between the government and beneficiaries throw multiple and flexible channels leading to more participation and engagement. These are some examples of e-Services that are provided/can be provided through e- Government system for business sector 24 hours/7days:

- Apply online for business permission certificate, commercial registrations and other governmental documents that are required from business sector.
- View and apply for governmental tenders.
- View and track all governmental transactions that you have performed for your business with different government agencies.
- Apply and track all transactions that are related to workers.

One of the most important elements of implementing E-Government systems is the interaction between users and E-Government systems. This interaction element is considered the main method that can measure the utilisation and success of E-Government systems. Therefore, this research will investigate and analyse factors that can influence the adoption and utilisation of e-Government in Saudi Arabia based on a framework that has been developed for this purpose.

The study involves group of samples and this part of the study is targeting the users from business sector who have/have not used e-Government services for their business. Your participation is highly appreciated and will contribute to the success of this study which aims to understand the factors that influence the utilisation of e-Government systems in Saudi Arabia.

Participation should not take more than 30 minutes of your time to complete a 99-item questionnaire. The questionnaire designed for this study consists of five sections. The first section contains general information questions while the second section collects information about your proficiency in using computer and the Internet; also collect information about your e-Government usage for your business transactions. The third section collects information about your preferences when obtaining governmental services for your business. The fourth section assesses your agreement degree on statements related to factors that might affect your e-Government usage for your business transactions. The fifth section measures the importance of implementing some properties in e- Government services that are provided for business sector. Returning the completed questionnaire implies your consent to participate.

My research also involves short interviews (approximately 30-45 minutes) which will give me the opportunity to know more about your opinion on implementing e-Government in Saudi Arabia and the factors that may influence its utilisation by business sector. If you are interested to participate in the interview, you can participate straightaway after completing the questionnaire or another time that is convenient to you can be arranged. You will be asked to sign a consent form and you have the option to participate in the questionnaire only or to participate in both the questionnaire and the interview.

Your participation is voluntary, it is up to you to decide whether to take part or not. If you decide to take part you should keep this information sheet for your record. If you decide to take part you are still free to withdraw at any time and without giving a reason. All data collected for this study will be kept strictly confidential. All data will be anonymised and pseudonyms will be used in the transcripts of the interviews to maintain the participants' privacy. The results of this study will be analysed and used in my research thesis. If you would like to have a copy of the results, contact me at my email address presented below.

This research has been approved by the Sciences and Technology Cross-Schools Research Ethics Committee (C-REC).

Contact point for further information:
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If you have any concern about the way in which the study has been conducted, you could contact my supervisor and the ethics committee (C-REC):

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Ethics Committee (C-REC): crecscitec@sussex.ac.uk

Thank you for taking time to read the information sheet
Date:

University of Sussex

Please note that the terms "my business" and "your business" in any question refer to the intended business itself regardless of whether the participant is the business owner or the business representative (employee).

First section: General information
Please answer the following questions by choosing the right answers that apply to you:

1. **Please indicate your gender:**
   - o Male
   - o Female

2. **What is your age?**
   - o 18 - 30
   - o 31 - 45
   - o 46 - 60
   - o Over 60

3. **What is your nationality?**
   - o Saudi
   - o Non-Saudi

4. **What is your education level?**
   - o Was not educated in school
   - o Secondary school or less
   - o Diploma
   - o Bachelor degree
   - o Master degree
   - o Doctorate or higher

5. **Which of the following best describes the type of area your business is based in?**
   - o Village
   - o Small city
   - o Large city

6. **How long has your business been established?**
   - o 0 – 5 years
   - o 6 – 10 years
   - o 11 – 20 years
   - o Over 20 years

7. **How many employees are there in your business?**
   - o 0 – 10 employees
   - o 11 – 50 employees
   - o 51 – 250 employees
   - o Moe than 250 employees

8. **Describe your relationship to the business?**
   - o Owner
   - o Representative
   - o Employee

9. **How much approximately is the annual net profit of your business in Saudi Riyal?**
   - o 0 – 60000
   - o 61000 – 120000
   - o 121000 – 180000
   - o 181000 – 240000
   - o More than 240000
   - o I do not know

10. Which of the following best describes your business field?

- o Constructing and building
- o Restaurants
- o Food supply and grocery
- o Cars trade (sale or lease)
- o Communication
- o Health and medical supply
- o Other ……..

Second section: Information about your Internet and e-Government usage

Please answer the following questions by choosing the right answers that apply to you:

11. Describe your proficiency of using computer?

- o Low
- o Average
- o Good
- o Excellent

12. How usually do you use the Internet?

- o Everyday
- o Several days a week
- o Several days a month
- o Never use the Internet (move to the third section)

13. Have you ever used Saudi e-Government systems to perform your business transactions (such as applying online for business permission certificate, commercial registrations …etc.)?

- o Yes (move to question 15)
- o No

14. What are the reasons that prevent you from using e-Government for your business transactions? (You can choose more than one answer, then move to question 18)

- ☐ I do not have computer
- ☐ I do not have Internet
- ☐ E-Government services that are provided to business sector is difficult to use
- ☐ I do not trust e-Government to perform my business's transactions
- ☐ The governmental transactions that I need for my business are not available through e-Government
- ☐ Other ……..

15. How do you rate your experience of using e-Government for your business transactions in general?

- o Very satisfactory (move to question 17)
- o Satisfactory to some extent
- o Not satisfactory

16. What are the reasons for not fully satisfied with the e-Services provided for your business? (You can choose more than one answer)

- ☐ The requirements of the intended e-Services were not clear
- ☐ I did not get the expected results
- ☐ The difficulty of using e-Government services that are provided to business sector
- ☐ Other ……..

17. How the previous experience of using e-Government for your business transactions will affect your future usage?

- o Will encourage me to perform more e-Transactions for my business
- o Will make me hesitant to perform e-Transactions for my business again
- o Will not affect my future usage

18. **Have you ever performed any non-governmental online transactions for your business (such as online purchasing for your business, online banking for your business account ….etc.)?**
    - o Yes
    - o No (move to the third section)

19. **Will the previous experience of performing non-governmental online transactions affect your willingness to use e-Government for your business transactions?**
    - o Yes, positively
    - o Yes, negatively
    - o No, it will not affect my e-Government usage for my business transactions

Third section: Information about your preferences when obtaining governmental services for your business.

Please answer the following questions by ticking the right boxes that apply to you.

20. **What are the methods that you use to get information about government transactions that you need for your business such as the agency opening hours, the agency branches, requirements and procedures that your business need to comply with ….. etc.**

	I usually use it	I sometimes use it	I never use it
A. Call the intended agency by phone	☐	☐	☐
B. Ask somebody who has previously dealt with the indented agency	☐	☐	☐
C. Find the information from the agency's websites	☐	☐	☐
D. Search on the Internet	☐	☐	☐
E. Visit the intended agency and ask them	☐	☐	☐
F. Other ……..			

21. **What are the methods that you prefer to use to perform governmental transactions for your business?**

	Strongly preferred	Preferred to some extent	Not preferred
A. Online through e-Government systems	☐	☐	☐
B. Physically by visiting the agencies	☐	☐	☐
C. Authorising service offices to perform the transactions	☐	☐	☐
D. Authorising somebody else to perform the transactions	☐	☐	☐
E. Other ……			

22. What are the advertising methods that can affect your willingness to use e-Government for your business transactions?

		Very influential	Influential to some extent	I do not know	Uninfluential to some extent	Very uninfluential
A.	Advertisements on social media	☐	☐	☐	☐	☐
B.	Advertisements on governmental agencies' websites	☐	☐	☐	☐	☐
C.	Advertisements in newspapers and magazines	☐	☐	☐	☐	☐
D.	Advertisements in public areas	☐	☐	☐	☐	☐
E.	Advertisements through emails and text messages	☐	☐	☐	☐	☐
F.	Advertisements on TV and radio channels	☐	☐	☐	☐	☐

23. What are the methods that you prefer to use (if available) to seek help when you face problems while using e-Government for your business transactions?

		Strongly preferred	Preferred to some extent	Not preferred
A.	Call customer service by phone	☐	☐	☐
B.	Use online chat with the agency representative	☐	☐	☐
C.	Send emails to the agency	☐	☐	☐
D.	Search on the Internet	☐	☐	☐
E.	Seek help from somebody who has previously used the same transaction	☐	☐	☐
F.	Try to find solution from Frequently Asked Questions (FAQ)	☐	☐	☐
G.	Other ……			

Fourth section: Information related to factors that influence your e-Government usage for your business transactions.

Please indicate your opinion about the following statements by circling the number which best represent your choice.

1= Strongly agree
2= Agree
3= I do not know or neutral
4= Disagree
5= Strongly disagree

24. Statements about your willingness to use e-Government systems for your business transactions		Strongly agree				Strongly disagree
a.	I intend to use e-Government services and transaction for all my business transactions (where available)	1	2	3	4	5
b.	I prefer to connect my business electronically with government agencies through e-Government systems	1	2	3	4	5

25. Statements about the e-Readiness of e-Government services that are provided to business sector		Strongly agree				Strongly disagree
a.	I think that the current Saudi e-Government infrastructure is inefficient to provide successful e-Services for business sector.	1	2	3	4	5
b.	I feel that the governmental organisations are not able to implement e-Services for business sector successfully as required.	1	2	3	4	5

26. Statement about the expected benefits from using e-Government for your business transactions		Strongly agree				Strongly disagree
a.	Using e-Government would enable me to perform my business transactions quicker than traditional ways.	1	2	3	4	5
b.	Using e-Government systems to perform my business transactions would save time, cost and effort.	1	2	3	4	5
c.	I believe that using e-Government system for my business would minimize legal and regulatory violations that might occur from my business.	1	2	3	4	5
d.	Using e-Government system will help my business to comply with all governmental procedures and requirements that are required from business firms.	1	2	3	4	5
e.	I believe that using e-Government would ensure equality in Transactions processing amongst business firms.	1	2	3	4	5
f.	I believe that e-Government would increase investment opportunities in business sector such as online systems for procurement and maintenance tendering.	1	2	3	4	5
g.	I believe that using e-Government systems would reduce procedures that might delay my business transactions such as documents ratification from different agencies.	1	2	3	4	5

27. Statements about the influence of social and cultural aspects	Strongly agree				Strongly disagree
a. I feel that dealing between business sector and government should be real and tangible (which means paper-based dealing).	1	2	3	4	5
b. I believe that e-Government systems would reduce the influence of interpersonal network (WASTA) when processing business firms' transactions.	1	2	3	4	5
c. Using e-Government services would reduce negative influence of some uncooperative employees on processing business firms' transactions.	1	2	3	4	5
d. I feel that e-Government is monitoring systems for business sector more than services systems.	1	2	3	4	5
e. The use of e-Government services by other business firms/colleagues would encourage me to use them for my business transactions.	1	2	3	4	5

28. Statements about the awareness of e-Government services provided to business sector.	Strongly agree				Strongly disagree
a. I feel that I have a good knowledge about what benefits, features and services that Saudi e-Government can offer for business sector.	1	2	3	4	5
b. Offering workshops and visual presentations about e-Government services provided to business sector will encourage me to attend and find out more.	1	2	3	4	5
c. I am satisfied with the current awareness campaigns and advertising about e-Government potentials and services provided to business sector.	1	2	3	4	5

29. Statements about the quality aspects of e-Government services provided to business sector.	Strongly agree				Strongly disagree
a. I feel that e-Government services provided to business sector are of high quality.	1	2	3	4	5
b. I think that the use of e-Government services will contribute to increase the quality of my business commercial activities.	1	2	3	4	5
c. I think that the current Saudi post mail services are fast and reliable to be used for correspondence with government agencies when using e-Government services.	1	2	3	4	5
d. I think SADAD system is efficient and sufficient to be used for businesses' e-Transactions fees payment.	1	2	3	4	5
e. The existence of technical errors (such as links not working or under construct pages) while using e-Government services for business sector transactions will reduce my willingness to use such e-Services.	1	2	3	4	5

30. Statements about the simplicity of using e-Government for business sector transactions.	Strongly agree				Strongly disagree
a. I believe that e-Government services provided to business sector are easy to use.	1	2	3	4	5

b.	I feel that using e-Government for my business transactions requires a lot of concentrate and effort.	1	2	3	4	5
c.	The interfaces design and layout of e-Government websites would influence my willingness to use e-Government for my business transactions.	1	2	3	4	5
d.	If I found that using e-Government for my business transactions is difficult and complex, I would hesitate to use it again.	1	2	3	4	5
e.	I think that the existence of authorised offices to help users from business sector with e-Government services use and correspondence is a good idea.	1	2	3	4	5

31.	**Statements about the reliability aspects in e-Government services provided to business sector.**	Strongly agree				Strongly disagree
a.	I feel that the Internet is not safe to be used to perform government e-Transactions for my business.	1	2	3	4	5
b.	I feel that e-Government is a safe environment that enables me to perform e-Transactions for my business securely.	1	2	3	4	5
c.	I would hesitate to provide sensitive information about my business through e-Government systems such as profits, expenses and investments information.	1	2	3	4	5
d.	I feel that my business data that is stored in e-Government systems can be misused.	1	2	3	4	5
e.	I feel that dealing with government electronically online could cause invasion of my business privacy.	1	2	3	4	5
f.	I think that my business data that is stored in e-Government systems can be used by other parties without my permission.	1	2	3	4	5
g.	I prefer to keep hard copies of my business transactions more than saving them electronically.	1	2	3	4	5
h.	I think that the government agencies in Saudi Arabia can be trusted to provide e-Services to business sector in a secure manner.	1	2	3	4	5
i.	Classifying the e-Services that are provided to business sector based on how much information the business entity would provide to e-Government systems is a good idea (i.e. the e-Services are provided depending on the amount of information provided).	1	2	3	4	5

Fifth section: Measuring the importance of implementing some properties in e-Government services provided to business sector.

Please determine to what extent the following properties are important when providing e-Government services to business sector by ticking the appropriate boxes.

32. The importance of providing the following information in e-Services websites that are provided to business sector.	Degree of importance				
	Very high	High	Middle	Low	Very low
a. Detailed steps on how to perform e-Transactions for my business electronically.	☐	☐	☐	☐	☐
b. Text and image examples of the e-Transactions' requirements.	☐	☐	☐	☐	☐
c. Detailed electronic version of the regulatory procedures and requirements that business entities need to comply with.	☐	☐	☐	☐	☐
d. Explanation of how your business transactions will be processed.	☐	☐	☐	☐	☐
e. The expected time to complete your business transactions.	☐	☐	☐	☐	☐
f. The last update time of the e-Service website.	☐	☐	☐	☐	☐
g. The last update time of the procedures and requirements that are related to business sector transactions.	☐	☐	☐	☐	☐
h. Information security policies.	☐	☐	☐	☐	☐
i. Information privacy policies.	☐	☐	☐	☐	☐
j. Regulations and laws that are related to reserve the rights of the users from business sector and government agencies.	☐	☐	☐	☐	☐

33. The importance of implementing the following features in e-Services systems that are provided to business sector.	Degree of importance				
	Very high	High	Middle	Low	Very low
a. The ability to track the status of my business transactions online.	☐	☐	☐	☐	☐
b. The ability to view the history of all government transactions that have been performed for my business.	☐	☐	☐	☐	☐
c. The ability to appeal online in case any of my business transactions has been rejected.	☐	☐	☐	☐	☐
d. A full access to my business data with a full control of its presence in e-Government systems.	☐	☐	☐	☐	☐
e. The existence of official mobile applications dedicated to users from business sector to interact with e-Government services.	☐	☐	☐	☐	☐
f. Providing customer care services dedicated to serve business sector with e-Government transactions.	☐	☐	☐	☐	☐
g. The ability to access to e-Government systems to perform my business transactions any time (24 hours/ 7 days).	☐	☐	☐	☐	☐
h. The ability to rate the quality and performance of e-Services and e-Transactions provided to business sector.	☐	☐	☐	☐	☐
i. Communicating with me (by emails or text messages) regarding to the status of my business transactions.	☐	☐	☐	☐	☐

If you have any additional information related to the Saudi e-Government services provided to business sector and the factors that influence its utilization from business sector, please write it here

……
……
……

Please provide your contact details if you are interested to participate in the interview (30-45 minutes) at different time so I can arrange a suitable time/place for you to take part.

……

Thank you very much again for your time and your participation
Saleh Alghamdi

University of Sussex

Interview Guide for users from business sector:

1. Have you ever performed any governmental e-Services/e-Transactions for your business entity?

If yes,

2. What are they and what do you think of them generally?
3. Do you feel that using e-Government for your business entity transactions is better than preforming them in the traditional ways? Why?
4. Have you ever needed to visit government agencies in person when you use e-Government services? Why?
5. Please describe the most prominent experience of performing e-Services/e-Transactions related to your business entity? What are the issue you faced?
6. Could you please indicate to what extent the following factors would impact the acceptance and willingness to use in the business sector?

Personal factors (age, gender, education level)

Other factors (your business location, your business income, employees number in your business, your business activities, your business age)

7. In your opinion, what are the factors that would encourage users from business sector to use e-Government services for their business transactions?
8. What are the factors that prevent users from business sector from using e-Government services or reduce their willingness to use such e-Services for their business transactions?
9. Could you please explain to what extent that your previous experience of using e-Services for your business would influence your willingness to use them again?
10. Do you think that e-Government systems are reliable and trustworthy to perform the business sector e-Transactions (with regards to information security, information privacy, the ability to process the e-Transactions successfully)?
11. What do you think of the awareness and advertising campaigns about e-Government services provided to the business sector?
12. Do you think that providing/applying laws, policies and conditions for using e-Government services would influence the adoption and use of users from the business sector?

    Is there anything you would like to add?

If no,

13. What the reasons for not using e-Government services for your business?
14. In your opinion, what should government organisations do to encourage you to use their e-Services for your business?

US
University of Sussex

أنا باحث دكتوراه في جامعة ساسيكس بالمملكة المتحدة، قسم المعلوماتية وبحثي يهتم بدراسة وتحليل العوامل المؤثرة على تبني وإستخدام الخدمات الحكومية الإلكترونية (خدمات وتعاملات الحكومة الإلكترونية) في المملكة العربية السعودية. عنوان البحث هو:

تحليل العوامل المؤثرة على تبني وإستخدام أنظمة وخدمات الحكومة الإلكترونية في المملكة العربية السعودية

أنت مدعو للمشاركة في هذه الإستبانة التي تستهدف قطاع الأعمال في السعودية (سواءاً ملاك المنشآت التجارية، ممثليهم أو موظفي القطاع الخاص الذين يتعاملون مع الجهات الحكومية فيما يخص معاملات شركاتهم) بغض النظر إذا كان سبق إستخدامها أم لا. أود في البداية توضيح الهدف من البحث وماذا ستتضمن المشاركة فيه. خدمات الحكومة الإلكترونية تعني إستخدام و توظيف تقنيات الإتصالات والمعلومات لتسهيل التواصل والتعامل بين الجهات الحكومية والمستفيدين (مواطنين، قطاع الأعمال أو جهات حكومية أخرى) وذلك بتقديم خدمات وتعاملات إلكترونية متكاملة ذات فعالية وكفاءة عالية مما يساهم في تعزيز التواصل والمشاركة من خلال قنوات متعددة ومرنة. هذه أمثلة على بعض الخدمات والتعاملات الإلكترونية التي تقدم أو يمكن أن تقدم من خلال الحكومة الإلكترونية لقطاع الأعمال ٢٤ ساعة/٧أيام في الأسبوع:

- التقدم إلكترونياً للحصول على سجل تجاري أو رخصة مزاولة نشاط تجاري أو أي معاملات حكومية متعلقة بالقطاع الخاص
- إستعراض و شراء المناقصات الحكومية إلكترونياً
- إستعراض ومتابعة جميع المعاملات الحكومية المتعلقة بالمنشآت التجارية والتي تم إجرائها مع جهات مختلفة إلكترونياً
- إجراء ومتابعة جميع المعاملات المتعلقة بالموظفين إلكترونياً

أحد أهم العناصر في تطبيق الحكومة الإلكترونية هو عنصر التفاعل بين المستخدمين وأنظمة الحكومة الإلكترونية. هذا التفاعل يعتبر من أهم العناصر لقياس مدى تقبل وإستخدام أنظمة وخدمات الحكومة الإلكترونية ومدى نجاحها. لذلك، هذا البحث يدرس ويحلل العوامل التي تؤثر على تبني، تقبل وإستخدام خدمات وتعاملات الحكومة الإلكترونية في المملكة العربية السعودية بناءاً على منهجية طورت في هذا البحث لهذا الغرض. هذا البحث يستهدف مجموعة مختلفة من المستخدمين وهذه الإستبانة تخص وتستهدف القطاع الخاص في المملكة العربية السعودية. أقدر تماماً مشاركتك في الدراسة والتي ستساهم في نجاح هذا البحث الذي يهدف إلى تحسين وتطوير تطبيقات الحكومة الإلكترونية بما يتناسب مع متطلبات المستخدمين.

المشاركة في هذه الدراسة تستغرق تقريباً ٣٠ دقيقة للإجابة على الإستبانه التي تحتوي على ٩٩ سؤال. الإستبانه تحتوي على خمسة أجزاء وهي كالتالي: الجزء الأول يشمل أسئلة عامة بينما الجزء الثاني يشمل أسئلة عن مهاراتك في إستخدام الكمبيوتر والإنترنت وكذلك أسئلة عن إستخدامك للخدمات الحكومية الإلكترونية في معاملات منشأتك/المنشأة التي تعمل بها. الجزء الثالث يشمل أسئلة عن تفضيلاتك في الحصول على خدمات حكومية تخص منشأتك/المنشأة التي تعمل بها. الجزء الرابع يقيم مدى تأثير عدد من العوامل على إستخدامك للخدمات الحكومية الإلكترونية التي تخص منشأتك/المنشأة التي تعمل بها. الجزء الخامس يقيس أهمية تقديم بعض المعلومات وتطبيق بعض الخيارات في الخدمات الحكومية الإلكترونية المقدمة لقطاع الأعمال. إجابتك على هذه الإستبانه وتسليمها للباحث تعني موافقتك على المشاركة.

البحث أيضاً يشتمل على مقابلات شخصية قصيرة (تقريباً ٣٠ ـ ٤٥ دقيقة) والتي سوف تعطي الفرصة لمعرفة المزيد عن آرائك في تطبيق خدمات الحكومة الإلكترونية المقدمة للقطاع الخاص في السعودية والعوامل المؤثرة على إستخدامها. إذا كنت مهتم بالمشاركة في المقابلة، يمكنك المشاركة بعد إكمال الإستبانة مباشرة أو يمكن ترتيب وقت آخر مناسب للمقابلة. سوف يتم طلب توقيعك على نموذج المشاركة في حال قبلت كما أنه يمكنك المشاركة في الإستبانة فقط أو المشاركة في الإستبانة والمقابلة معاً.

مشاركتك تعتبر تطوعية مما يعني أن الخيار لك في المشاركة من عدمها. أرجو الإحتفاظ بورقة المعلومات هذه في حالة الرغبة بالمشاركة. إذا قررت المشاركة في الدراسة، يمكنك الإنسحاب في أي وقت وبدون إعطاء أسباب. جميع البيانات والمعلومات التي سيتم جمعها سوف يتم حفظها بسرية تامة. سوف يتم إخفاء وترميز أي معلومات يمكن من خلالها تحديد هوية المشارك للحفاظ على خصوصية المشاركين. سوف يتم تحليل نتائج هذه الدراسة وإستخدامها لأغراض البحث فقط. إذا أردت مناقشة نتائج هذه الدراسة، لا تتردد في التواصل معي.

تمت الموافقة على إجراء هذه الدراسة من قبل لجنة أخلاقيات بحوث العلوم والتقنية (C_REC) بجامعة ساسيكس.

وسائل التواصل مع الباحث: صالح الغامدي، البريد الإلكتروني: sa434@sussex.ac.uk، رقم الهاتف: 00447790008811

إذا كان لديك أي إستفسارات عن الطريقة التي تمت خلالها هذه الدراسة، يرجى التواصل مع المشرف الأكاديمي أو لجنة أخلاقيات بحوث العلوم والتقنية (C_REC):

الدكتورة ناتاليا بيلوف، البريد الإلكتروني: N.Beloff@sussex.ac.uk, هاتف: 00441273678919
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لجنة أخلاقيات بحوث العلوم والتقنية (C_REC): crecscitec@sussex.ac.uk

شكراً جزيلاً
التاريخ:

University of Sussex

ارجو الملاحظة أن كلمة (منشأتك) في جميع الاسئلة التالية يقصد بها المنشأة التي تملكها او تعمل بها سواءً كانت شركة, مؤسسه, محل او أي نشاط تجاري

الجزء الأول – معلومات عامة
أرجو اختيار الإجابة المناسبة للأسئلة التالية:

1. **الجنس:**
   - ○ ذكر
   - ○ أنثى

2. **العمر:**
   - ○ 18 – 30
   - ○ 31 – 45
   - ○ 46 – 60
   - ○ أكثر من 60

3. **الجنسية:**
   - ○ سعودي
   - ○ غير سعودي

4. **المؤهل العلمي:**
   - ○ لم يتم التعلم في المدارس
   - ○ ثانوي أو أقل
   - ○ دبلوم
   - ○ بكالوريوس
   - ○ ماجستير
   - ○ دكتوراه

5. **وصف المنطقة التي توجد بها منشأتك:**
   - ○ قرية
   - ○ مدينة صغيره
   - ○ مدينة كبيره (رئيسية)

6. **كم هو عمر منشأتك:**
   - ○ 0 – 5 سنوات
   - ○ 6 – 10 سنوات
   - ○ 11 – 20 سنه
   - ○ اكثر من 20 سنه

7. **كم عدد الموظفين في منشأتك؟**
   - ○ 0 – 10 موظفين
   - ○ 11 – 50 موظف
   - ○ 51 – 250 موظف
   - ○ اكثر من 250 موظف

8. **صف علاقتك بالمنشأة:**
   - ○ مالك
   - ○ ممثل او وكيل
   - ○ موظف

9. **كم هو تقريباً الدخل السنوي (الربح الصافي) للمنشأة (بالريال السعودي)؟**
   - ○ 0 – 60000
   - ○ 61000 – 120000
   - ○ 121000 – 180000
   - ○ 181000 – 250000
   - ○ اكثر من 250000
   - ○ لا أعلم

10. ما هو نشاط منشأتك؟

- o مقاولات وبناء
- o تغذية ومطاعم
- o مواد تموينية وسوبرماركت
- o سيارات (بيع او تأجير)
- o اتصالات
- o اجهزه كهربائية
- o صحة ومنشآت طبية
- o غير ذلك .....

الجزء الثاني – معلومات عن معرفتك للحاسب الآلي واستخدامك للانترنت والخدمات الإلكترونية
أرجو اختيار الإجابة المناسبة للأسئلة التالية :

11. كيف تقيم مستوى معرفتك لاستخدام الحاسب الآلي (الكمبيوتر) بشكل عام؟

- o ضعيفة
- o متوسطة
- o جيدة
- o ممتازة

12. كم هو عدد مرات استخدامك للانترنت؟

- o لا استخدم الانترنت (انتقل الى الجزء الثالث)
- o كل يوم
- o عدة مرات في الاسبوع
- o عدة مرات في الشهر
- o عدة مرات في السنة

13. هل سبق وان استخدمت الانظمة الحكومية الالكترونية عبر الانترنت للحصول على خدمات او انجاز معاملات متعلقة بمنشأتك (مثل الخدمات المقدمة من وزارة العمل او وزارة التجارة)؟

- o نعم (انتقل الى سؤال 15)
- o لا

14. ماهي أسباب عدم استخدامك للخدمات الحكومية الالكترونية في التعاملات المتعلقة بمنشأتك, يمكن اختيار أكثر من اجابة؟ (ثم انتقل الى سؤال 18)

- □ لا يوجد لدي كمبيوتر
- □ لا يوجد لدي اتصال بالانترنت
- □ استخدام الخدمات الحكومية الالكترونية المقدمة لقطاع الاعمال صعب
- □ لا اثق بالانظمة الالكترونية لانجاز معاملات تخص منشأتي
- □ الخدمات الحكومية التي تحتاجها منشأتي غير متوفره الكترونياً
- □ اخرى .....

15. كيف تقيم بشكل عام تجربتك لاستخدام الانظمة الالكترونية للحصول على خدمات حكومية متعلقة بمنشأتك؟

- o مرضية جداً (انتقل الى سؤال 17)
- o مرضية الى حد ما
- o غير مرضية

16. ماهي أسباب عدم رضاك التام عن تجربتك في استخدام الخدمات الحكومية الالكترونية لمعاملات منشأتك؟ (يمكن اختيار اكثر من اجابة)

- □ متطلبات الخدمات الإلكترونية غير واضحة
- □ لم احصل على النتائج المتوقعة
- □ صعوبة استخدام الخدمات الحكومية الإلكترونية المقدمة لقطاع الاعمال
- □ اسباب اخرى .....

17. كيف ستؤثر تجربتك السابقة لاستخدام الخدمات الحكومية الإلكترونية في معاملات منشأتك على استخدامك لها في المستقبل؟

- o سوف تشجعني على استخدام خدمات الكترونية اكثر
- o سوف تجعلني متردداً في الحصول على خدمات الكترونية لمنشأتي مرة اخرى
- o لن تؤثر على رغبتي في استخدام الخدمات الإلكترونية لمعاملات منشأتي مستقبلاً

18. هل سبق وأن استخدمت خدمات الكترونية غير حكومية عبر الانترنت في الامور المتعلقة بمنشأتك (مثل الشراء عبر الانترنت او ادارة حساب منشأتك البنكي اونلاين .....الخ)؟

- o نعم
- o لا (انتقل الى الجزء الثالث)

19. هل ستؤثر تجربتك للخدمات الالكترونية الغير حكومية على رغبتك في استخدام الخدمات الحكومية الإلكترونية فيما يتعلق بامور منشأتك؟

- o نعم, ايجاباً
- o نعم, سلباً
- o لا, لن تؤثر

الجزء الثالث – معلومات متعلقة بالطرق المفضلة لديك في الحصول على خدمات حكومية متعلقة بمنشأتك التجارية.
ارجو الاجابة على الاسئلة التالية بوضع علامة (X) على الاختبار المناسب.

20. ماهي الطرق التي تستخدمها عادةً للحصول على معلومات تحتاجها في انجاز معاملات منشأتك التجارية مثل: ساعات عمل الجهه الحكومية, فروع الجهه الحكومية, خطوات اجراء المعاملة, المتطلبات الواجبتوفرها لانجاز المعاملة ....الخ

	استخدمها دائماً	استخدمها احياناً	لا استخدمها
الاتصال هاتفياً بالجهه الحكومية	☐	☐	☐
سؤال شخص سبق وأن تعامل مع نفس الجهه الحكومية	☐	☐	☐
الحصول على المعلومات من الموقع الإلكتروني للجهه الحكومية	☐	☐	☐
البحث في الانترنت	☐	☐	☐
زيارة الجهه الحكومية شخصياً	☐	☐	☐

أخرى .....

21. ماهي الطرق التي تفضل أن تستخدمها لانجاز معاملات حكومية تخص منشأتك التجارية

	افضلها بشدة	افضلها الى حد ما	لا افضلها
انجازها عن طريق استخدام الخدمات الحكومية الالكترونية (اونلاين)	☐	☐	☐
انجازها شخصياً بزيارة الجهات الحكومية	☐	☐	☐
الاستعانة بمكاتب الخدمات والمعقبين لانجازها	☐	☐	☐
توكيل شخص آخر لانجازها (مثل موظف آخر)	☐	☐	☐
اخرى			

22. ماهي وسائل المساعدة التي تفضل أن تستعين بها (في حال توفرها) اذا واجهتك مشكلة عند إجراء تعاملات حكومية إلكترونية تخص منشأتك التجارية.

	افضلها بشدة	افضلها الى حد ما	لا افضلها
الاتصال بخدمة العملاء في الجهه الحكومية هاتفياً	□	□	□
استخدام المحادثة الالكترونية المباشرة مع خدمة العملاء (محادثة فورية)	□	□	□
ارسال ايميل للجهه الحكومية	□	□	□
تصفح اجوبة الاسئلة المتكررة (FAQ) في الموقع الالكتروني للجهه الحكومية	□	□	□
البحث عن حل المشكلة في الانترنت	□	□	□
الاستعانة بشخص سبق وان اجرى نفس الخدمة الالكترونية	□	□	□

23. ماهي درجة تأثير وسائل الدعاية التالية على زيادة رغبتك في استخدام انظمة الحكومة الالكترونية في معاملات منشأتك التجارية

	مؤثرة كثيراً	مؤثرة الى حد ما	لا اعلم او محايد	غير مؤثرة الى حد ما	غير مؤثرة اطلاقاً
الاعلانات عبر وسائل التواصل الاجتماعي	□	□	□	□	□
الاعلانات الموجوده في مواقع الوزارات والجهات الحكومية	□	□	□	□	□
الاعانات عبر الصحف والمجلات	□	□	□	□	□
الاعلانات عبر التلفزيون واذاعات الراديو	□	□	□	□	□
اللوحات والاعلانات في الاماكن العامة	□	□	□	□	□
الاعلانات عبر رسائل البريد الالكتروني او رسائل الجوال	□	□	□	□	□

الجزء الرابع – باستخدام المقياس التالي من 1 – 5 أرجو وضع دائرة حول الرقم الذي يعبر عن مدى موافقتك على العبارات التالية والتي تتعلق بالعوامل التي تؤثر على استخدامك لأنظمة الحكومة الإلكترونية في الحصول على خدمات او انجاز معاملات تخص منشأتك التجارية. في اجاباتك ارجو مقارنة التعاملات الالكترونية عبر الانترنت مع الطرق التقليدية مثل مراجعة الدوائر الحكومية شخصياً أو الاستعانة بمكاتب الخدمات.

1 = أوافق بشده
2 = أوافق
3 = لا أعلم أو محايد
4 = لا أوافق
5 = لا أوافق بشدة

24. الرغبة في استخدام أنظمة التعاملات الحكومية الإلكترونية					أوافق بشده	لا أوافق بشده
أ-	لدي الرغبة في إستخدام الحكومة الإلكترونية في جميع التعاملات الحكومية المتعلقة بمنشأتي	1	2	3	4	5
ب-	أفضل إرتباط منشأتي التجارية بالجهات الحكومية الكترونياً عن طريق انظمة حكومية الكترونية	1	2	3	4	5

25. مدى جاهزية الخدمات الحكومية الالكترونية المقدمة لقطاع الاعمال					أوافق بشده	لا أوافق بشده
أ-	اعتقد أن البنية التحتية الحالية في المملكة العربية السعودية ليست كافية لتقديم خدمات حكومية الكترونية ناجحة لقطاع الاعمال	1	2	3	4	5
ب-	اشعر بأن الجهات الحكومية في المملكة العربية السعودية غير قادرة حالياً على تقديم خدمات الكترونية لقطاع الاعمال بالشكل المطلوب	1	2	3	4	5

26. الفوائد المتوقعة من استخدام الخدمات الحكومية الالكترونية المقدمة لقطاع الاعمال					أوافق بشده	لا أوافق بشده
أ-	استخدام أنظمة الحكومة الإلكترونية يمكنني من انجاز معاملات منشأتي بشكل أسرع من الطرق التقليدية	1	2	3	4	5
ب-	استخدام انظمة الحكومة الالكترونية في انجاز معاملات منشأتي سيوفر وقتي ومالي وجهدي	1	2	3	4	5
ت-	اعتقد ان استخدام الانظمة الحكومية الالكترونية في انجاز معاملات منشأتي سوف يقلل من التجاوزات القانونية والنظامية التي يمكن ان تقع فيها منشأتي	1	2	3	4	5
ث-	اعتقد ان استخدام الانظمة الحكومة الالكترونية سوف يساعد على الالتزام بالاجراءات والمتطلبات الواجب توفرها في منشأتي	1	2	3	4	5
ج-	تطبيق انظمة الحكومة الالكترونية سوف يضمن المساواة في تعامل الجهات الحكومية مع قطاع الاعمال والمنشآت التجارية من ناحية إنجاز المعاملات	1	2	3	4	5
ح-	اعتقد ان تطبيق انظمة الحكومة الالكترونية سوف يزيد من فرص الاستثمار في قطاع الاعمال (مثل نظام المناقصات الحكومية الالكتروني)	1	2	3	4	5
خ-	استخدام الخدمات الحكومية الالكترونية سوف يقلل من الاجراءات التي قد تؤخر انهاء معاملات منشأتي مثل: تصديق المستندات او زيارة عدة جهات حكومية	1	2	3	4	5

27. تأثير الجوانب الثقافية والإجتماعية على استخدام الحكومة الإلكترونية في قطاع الاعمال		أوافق بشدة				لا أوافق بشدة
أ-	اشعر ان تعامل المنشآت التجارية مع الجهات الحكومية يجب ان يكون مباشر وملموس (ورقي وليس الكتروني)	1	2	3	4	5
ب-	تطبيق انظمة الحكومة الالكترونية سوف يقلل من تأثير العلاقات الشخصية (الواسطة) في تعاملات المنشآت التجارية مع الجهات الحكومية	1	2	3	4	5
ت-	اعتقد ان استخدام الخدمات الحكومية الالكترونية المقدمة لقطاع الاعمال سوف يحد من التأثير السلبي لبعض الموظفين الحكوميين الغير متعاونين على انهاء المعاملات	1	2	3	4	5
ث-	اشعر ان انظمة الحكومة الالكترونية هي انظمة مراقبة لقطاع الاعمال اكثر من انها انظمة خدمات	1	2	3	4	5
ج-	استخدام المنشآت التجارية الاخرى للخدمات الحكومية الالكترونية سوف يشجعني على استخدام تلك الخدمات لمنشأتي	1	2	3	4	5

28. تأثير الجوانب المعرفية على استخدام الخدمات الحكومية الالكترونية المقدمة لقطاع الاعمال		أوافق بشدة				لا أوافق بشدة
أ-	اعتقد أني أملك معرفة جيدة عن إمكانيات, مميزات وخدمات أنظمة الحكومة الإلكترونية المقدمة لقطاع الاعمال في المملكة العربية السعودية	1	2	3	4	5
ث-	توفير ورش عمل وعروض مرئية عن إمكانيات وخدمات الحكومة الإلكترونية المقدمة لقطاع الاعمال سوف يشجعني على حضورها ومعرفة المزيد عنها	1	2	3	4	5
ج-	أنا راضي عن حملات التوعية والدعايات التي تقوم بها الجهات الحكومية للتعريف بامكانيات وخدمات الحكومة الالكترونية المقدمة لقطاع الاعمال	1	2	3	4	5

29. جوانب متعلقة بجودة الخدمات والتعاملات الإلكترونية المقدمة لقطاع الاعمال		أوافق بشدة				لا أوافق بشدة
أ-	اشعر بأن الخدمات الحكومية الإلكترونية المقدمة لقطاع الاعمال حالياً عالية الجودة	1	2	3	4	5
ب-	اعتقد ان استخدام الخدمات الحكومية الالكترونية سوف يساهم في زيادة جودة الانشطة التجارية التي تقوم بها منشأتي	1	2	3	4	5
ت-	خدمات البريد السعودي الحالية موثوقة وكافية في حال استخدمتها لارسال واستقبال الاوراق والمستندات الخاصة بمعاملات منشأتي عند استخدام الخدمات الحكومية الالكترونية	1	2	3	4	5
ث-	اعتقد أن نظام سداد كافي وفعال لاستخدامه في دفع رسوم المعاملات والخدمات الخاصة بمنشأتي	1	2	3	4	5
ج-	وجود أخطاء تقنية مثل (روابط لا تعمل, صفحات تحت الإنشاء, خطأ في السيرفر ....الخ) عند استخدامي للخدمات الحكومية الإلكترونية المقدمة لقطاع الاعمال سوف يقلل من رغبتي في إجراء معاملات منشأتي إلكترونياً	1	2	3	4	5

30. جوانب متعلقة بسهولة وبساطة استخدام الخدمات الحكومية الإلكترونية المقدمة لقطاع الاعمال		أوافق بشدة				لا أوافق بشدة
أ-	ارى ان استخدام الحكومة الالكترونية في انجاز المعاملات الحكومية الخاصة بمنشأتي امر سهل	1	2	3	4	5
ب-	اجراء المعاملات الحكومية المتعلقة بمنشأتي الكترونياً يتطلب الكثير من التركيز والجهد	1	2	3	4	5
ت-	تصميم صفحات مواقع الخدمات الحكومية الالكترونية المقدمة لقطاع الاعمال قد يؤثر بشكل كبير على رغبتي في استخدام تلك الخدمات لمعاملات منشأتي	1	2	3	4	5
ث-	اذا وجدت ان استخدام انظمة الحكومة الالكترونية لانهاء معاملات منشأتي امر صعب ومعقد, سوف اتردد في استخدامها مرة اخرى	1	2	3	4	5
ج-	اعتقد ان وجود مكاتب مصرحة ومنتشرة لمساعدة اصحاب الاعمال او ممثليهم في اجراء معاملات منشأتهم الكترونياً فكرة جيدة (مثل المساعدة في اكمال الطلبات, ارسال واستقبال المعاملات والمستندات .....الخ)	1	2	3	4	5

31. جوانب متعلقة بالثقة وامن المعلومات في الخدمات الحكومية الالكترونية المقدمة لقطاع الاعمال		أوافق بشدة				لا أوافق بشدة
أ-	الانترنت غير آمن للحصول على خدمات حكومية خاصة بمنشأتي	1	2	3	4	5
ب-	الأنظمة الحكومة الإلكترونية ذات بيئة آمنة يمكنني إجراء معاملات منشأتي من خلالها بشكل آمن	1	2	3	4	5
ت-	سوف أتردد في تزويد أنظمة الحكومة الإلكترونية بمعلومات حساسة عن منشأتي مثل الارباح, المصروفات, الاستثمارات .....الخ	1	2	3	4	5
ث-	اشعر ان بيانات منشأتي المخزنة في انظمة الحكومة الالكترونية يمكن ان يساء استخدامها	1	2	3	4	5
ج-	اشعر ان التعامل الالكتروني مع الجهات الحكومية قد يتسبب في انتهاك خصوصية منشأتي	1	2	3	4	5
ح-	أشعر بأن بيانات منشأتي المخزنة في أنظمة الحكومة الإلكترونية يمكن أن تستخدم بواسطة اطراف اخرى دون موافقتي	1	2	3	4	5
خ-	افضل ان احتفظ بنسخ مطبوعة من معاملات منشأتي اكثر من تخزينها الكترونياً	1	2	3	4	5
د-	يمكن الوثوق بالجهات الحكومية في تقديم خدمات وتعاملات الكترونية لقطاع الاعمال بشكل آمن	1	2	3	4	5
ذ-	تقسيم الخدمات الالكترونية المقدمة لقطاع الاعمال على حسب كمية المعلومات المزودة من اصحاب الاعمال فكرة جيدة (بحيث اذا لم يرغب صاحب المنشأة التجارية بتزويد معلومات معينة عن منشأته فانه لن يحصل على بعض الخدمات الكترونياً)	1	2	3	4	5

الجزء الخامس–أرجو تحديد درجة أهمية وجود العناصر التالية عند تقديم خدمات حكومية الكترونية لقطاع الاعمال

32. درجة أهمية وجود المعلومات التالية في انظمةالخدمات الحكومية الالكترونية المقدمة لقطاع الاعمال		درجة الأهمية				
		عالية جداً	عالية	متوسطة	منخفضة	منخفضة جداً
		5	4	3	2	1
أ-	خطوات مفصلة عن كيفية إجراء الخدمات الحكومية المقدمة لقطاع الاعمال إلكترونياً	☐	☐	☐	☐	☐
ز-	نسخة الكترونية مفصلة عن الاجراءات والمتطلبات النظامية الواجب توفرها عند مزاولة نشاط تجاري (موضحة على حسب نوع النشاط)	☐	☐	☐	☐	☐
س-	امثلة مكتوبة ومصورة عن المتطلبات الواجب توفرها عند اجراء معاملة حكومية متعلقة بالمنشأة التجارية	☐	☐	☐	☐	☐
ش-	شرح الاجراءات التي سوف تتم على المعاملة	☐	☐	☐	☐	☐
ص-	الوقت المتوقع لاكمال المعاملة	☐	☐	☐	☐	☐
ض-	السياسة المتبعة في امن المعلومات المزودة والمخزنة عن المنشآت التجارية	☐	☐	☐	☐	☐
ط-	السياسات المتبعة في حفظ خصوصية المنشآت التجارية وبياناتها	☐	☐	☐	☐	☐
ظ-	تاريخ اخر تحديث لصفحات الخدمات الالكترونية المقدمة لقطاع الاعمال	☐	☐	☐	☐	☐
ع-	تاريخ اخر تحديث للاجراءات والمتطلبات الحكومية المتعلقة بمعاملات قطاع الاعمال	☐	☐	☐	☐	☐
غ-	التشريعات القانونية المتعلقة بحفظ حقوق المستخدمين من قطاع الاعمال والجهه المقدمة للخدمة الإلكترونية	☐	☐	☐	☐	☐

33. درجة أهمية وجود المميزات التالية عند تطبيق انظمةالخدمات الحكومية الالكترونية المقدمة لقطاع الاعمال		درجة الأهمية				
		عالية جداً	عالية	متوسطة	منخفضة	منخفضة جداً
		5	4	3	2	1
أ-	القدرة على متابعة حالة المعاملات الحكومية الخاصة بمنشأتي إلكترونياً	☐	☐	☐	☐	☐
ب-	القدرة على الاعتراض الكترونياً في حالة رفض معاملة منشأتي	☐	☐	☐	☐	☐
ت-	القدرة على استعراض جميع المعاملات الحكومية التي سبق وان اجريت الكترونياً لمنشأتي	☐	☐	☐	☐	☐
ث-	التحكم الكامل في وجود او حذف البيانات الالكترونية المتعلقة بمنشأتي	☐	☐	☐	☐	☐
ج-	التواصل معي بخصوص حالة المعاملات التي اجريت الكترونياً لمنشأتي	☐	☐	☐	☐	☐
ح-	وجود خدمة عملاء مخصص لمساعدة اصحاب الاعمال او ممثليهم في تعاملاتهم الالكترونية	☐	☐	☐	☐	☐
خ-	امكانية الحصول على خدمات حكومية الكترونية للمنشآت التجارية 24 ساعه/ 7ايام	☐	☐	☐	☐	☐
د-	القدرة على تقييم جودة التعاملات والخدمات الحكومية الالكترونية المقدمة لقطاع الاعمال	☐	☐	☐	☐	☐
ذ-	وجود تطبيقات للهواتف الذكية مخصصة للمستخدمين من قطاع الاعمال للتفاعل مع انظمة الحكومة الالكترونية فيما يخص معاملات منشأتهم	☐	☐	☐	☐	☐

إذا كان هناك أي إضافات بخصوص أنظمة الحكومة الالكترونية وخدماتها المقدمة لقطاع الأعمال ارجو ذكرها هنا

.....
.....

بحثي هذا سوف يتضمن أيضاً مقابلات شخصية قصيرة تستغرق تقريباً (٣٠-٤٥ دقيقة) والتي سوف تعطيني الفرصة في معرفة المزيد عن رأيك في خدمات الحكومة الإلكترونية المقدمة لقطاع الاعمال في المملكة العربية السعودية وكذلك العوامل التي تؤثر على استخدامك كصاحب منشأة تجارية او ممثل لمنشأة تجارية , أرجو كتابة بريدك الإلكتروني أو رقم هاتفك إذا رغبت مشكوراً في المشاركة أتمكن من التواصل معك وتنسيق المقابلة .....

أكرر شكري على تعاونك ومشاركتك في هذا الإستبيان

صالح بن عبدالقادر

أجندة المقابلة (قطاع الأعمال)

١ـ هل سبق وأن استخدمت أي خدمات أو تعاملات حكومية إلكترونية متعلقة بمنشأتك؟

(نعم)

٢ـ ماهي وماهو رأيك فيها بشكل عام؟

٣ـ هل ترى أن استخدام الأنظمة الإلكترونية لإجراء/إنهاء معاملات منشأتك أفضل من الطرق التقليدية كالزيارة الشخصية للجهه الحكومية؟ لماذا؟

٤ـ هل اضطريت الى مراجعة الجهات الحكومية (سواءً شخصياً او بارسال مندوب) عند استخدامك للخدمات الحكومية الالكترونيه ولماذا؟

٥ـ الرجاء وصف تجاربك في انجاز معاملات الكترونيه تخص منشأتك؟ وماهي المشاكل التي واجهتها؟

٦ـ من فضلك اشرح باختصار الى اي مدى ترى ان العوامل التالية قد تؤثر على رغبة المستخدمين من قطاع الاعمال في استخدام الخدمات الالكترونيه لمعاملات منشآتهم:

- تأثير عمر المستخدم على استخدامه
- تأثير جنس المستخدم على استخدامه
- تأثير مستوى تعليم المستخدم على استخدامه

عوامل اخرى متعلقة بالمنشأه:

- تأثير الموقع الجغرافي للمنشأه
- تأثير دخل المنشأه
- تأثير عدد الموظفين في المنشأه
- تأثير نشاط المنشأه التجاري
- تأثير عمر المنشأه

٧ـ في رأيك، ماهي الاسباب والعوامل التي تشجع او تزيد من رغبة المستخدمين من قطاع الاعمال في استخدام الخدمات الحكومية الالكترونية لمعاملات منشآتهم؟

٨ـ وماهي الاسباب والعوامل التي قد تمنع او تقلل من رغبتهم في استخدامها لمعاملات منشآتهم؟

٩ـ من فضلك اشرح باختصار هل لاستخدامك السابق للخدمات الالكترونيه في انجار معاملات منشأتك تأثير على رغبتك في استخدامها مره اخرى؟

١٠ـ هل تعتقد ان استخدام الانظمه الالكترونيه موثوق لانجاز المعاملات الحكوميه الخاصه بقطاع الاعمال (موثوق من ناحيه امن المعلومات، حمايه الخصوصيه، القدره على انجاز المعامله بشكل ناجح)

١١ـ ما رأيك في حملات التوعيه والحملات الدعائيه بالخدمات الحكوميه الالكترونيه المقدمه لقطاع الاعمال؟

١٢ـ هل ترى ان وضع قوانين، سياسات واحكام لاستخدام الخدمات الحكوميه الالكترونيه يؤثر على رغبة المستخدمين من قطاع الاعمال في استخدامها؟

هل يوجد اضافات تود ان تضيفها عن تطبيق الخدمات الحكومية الالكترونية لقطاع الاعمال؟

(لا)

١٣ـ ماهي اسباب عدم استخدامك للخدمات الحكومية الالكترونية لمعاملات منشأتك؟

١٤ـ برأيك، ماذا يجب ان تفعل الوزارات والجهات الحكومية ذات العلاقه بمعاملات القطاع الخاص لكي تشجعك على استخدام الخدمات والتعاملات الالكترونية لمنشأتك؟

Appendix G: Figures and graphs in large size

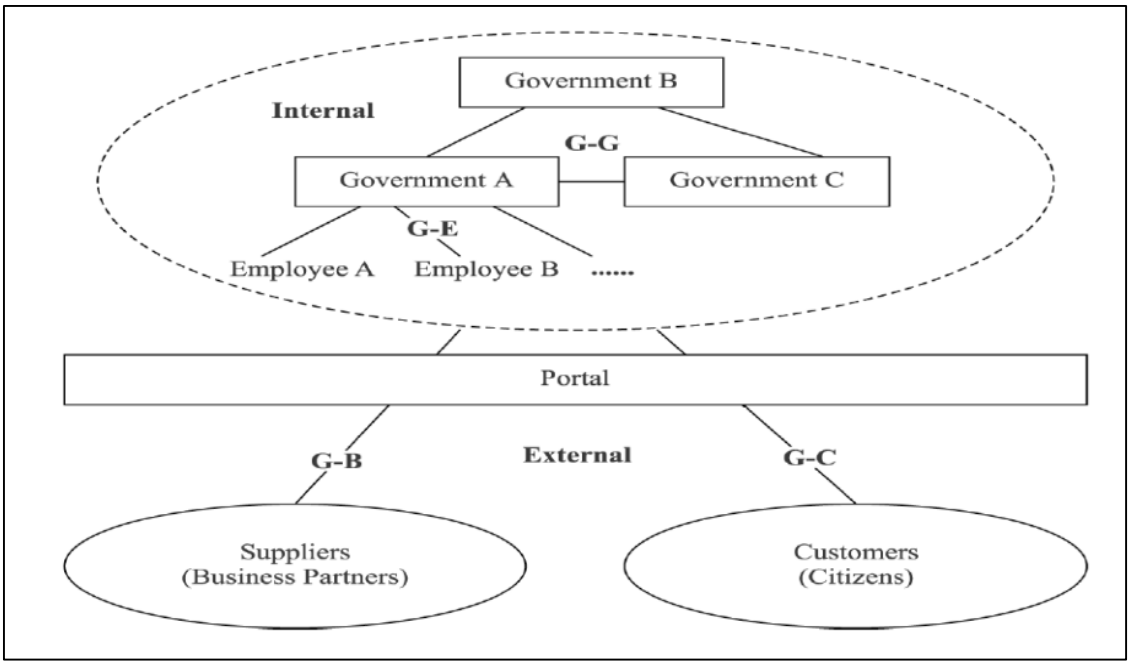

Figure 2.1: E-Government four domains (Siau & Long, 2005).

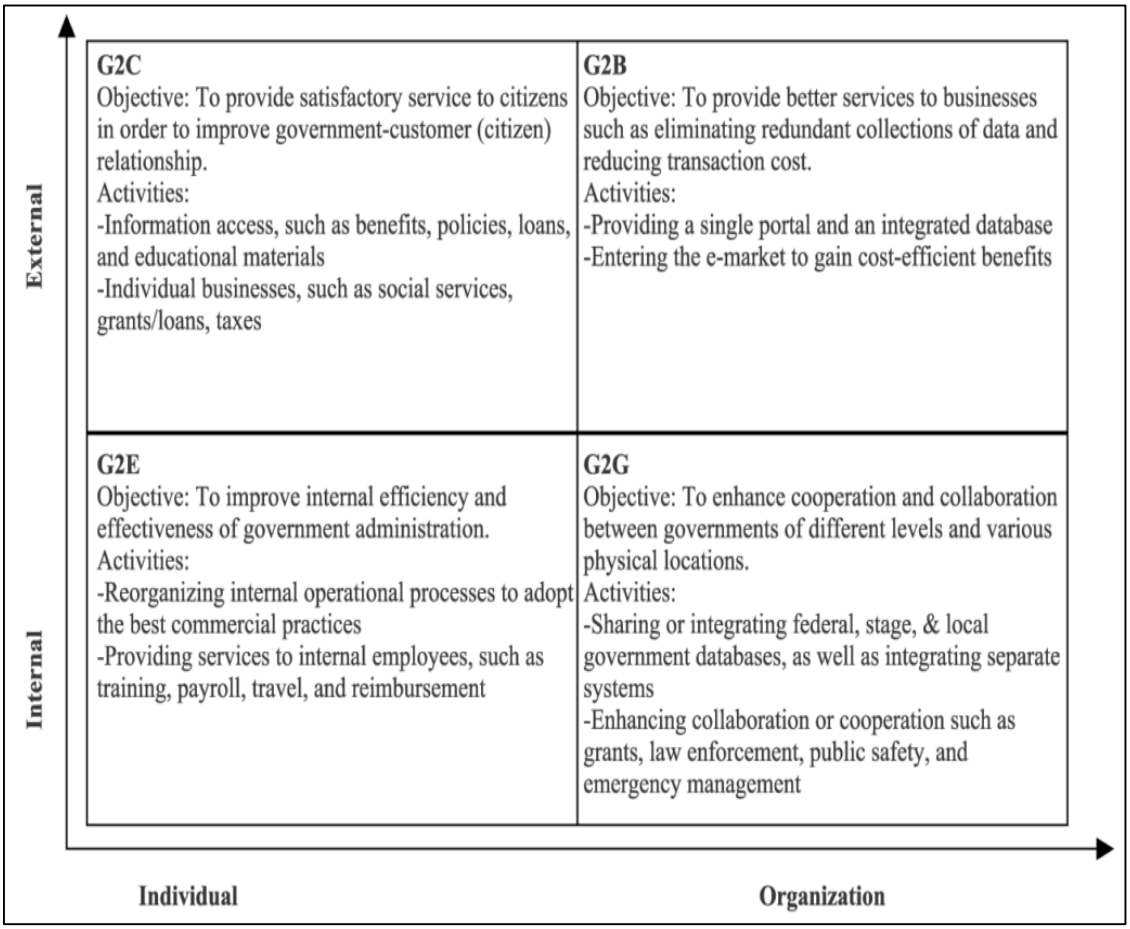

Figure 2.2: Objectives and relationships of e-Government domains (Siau & Long, 2005)

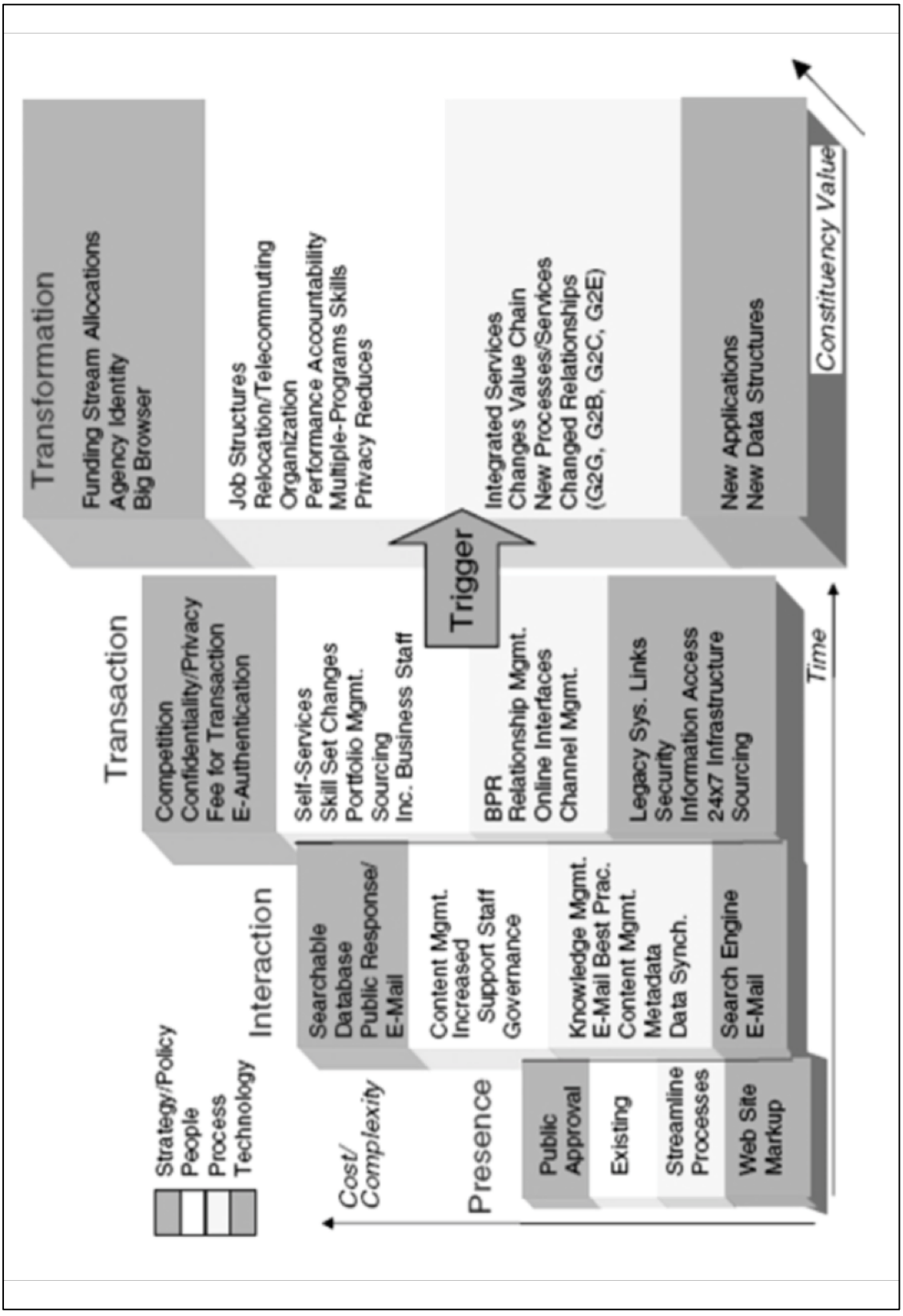

Figure 2.3: Gartner's e-Government stages model (Zarei et al., 2008; Al-Hashmi & Darem, 2008)

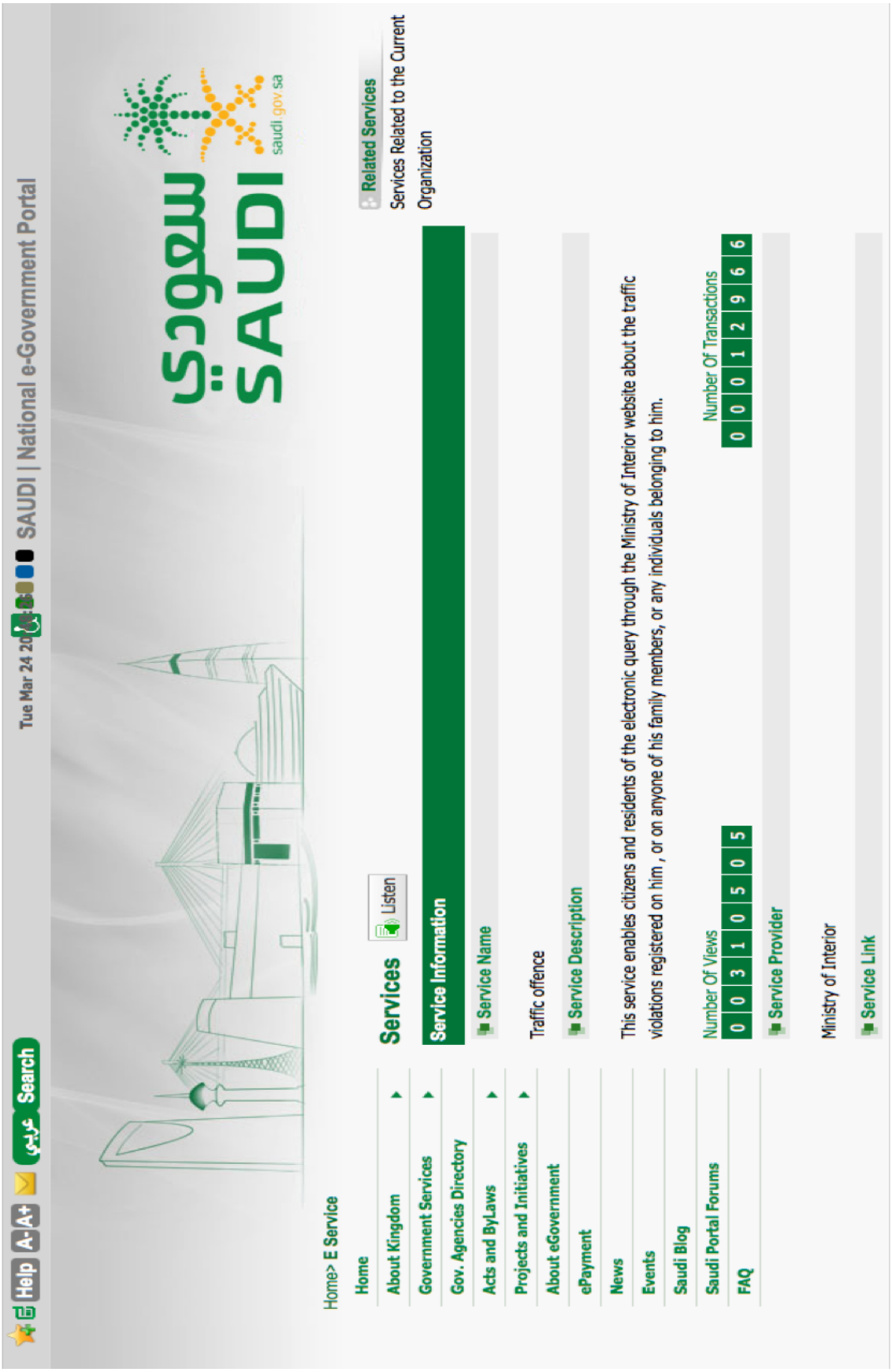

Figure 2.14: Example of low number of viewings and transactions for traffic fines queries and payment e-Services (Saudi Government, n.d.)

Figure 2.14: Example of low number of viewings and transactions for traffic fines queries and payment e-Services (Saudi Government, n.d.)

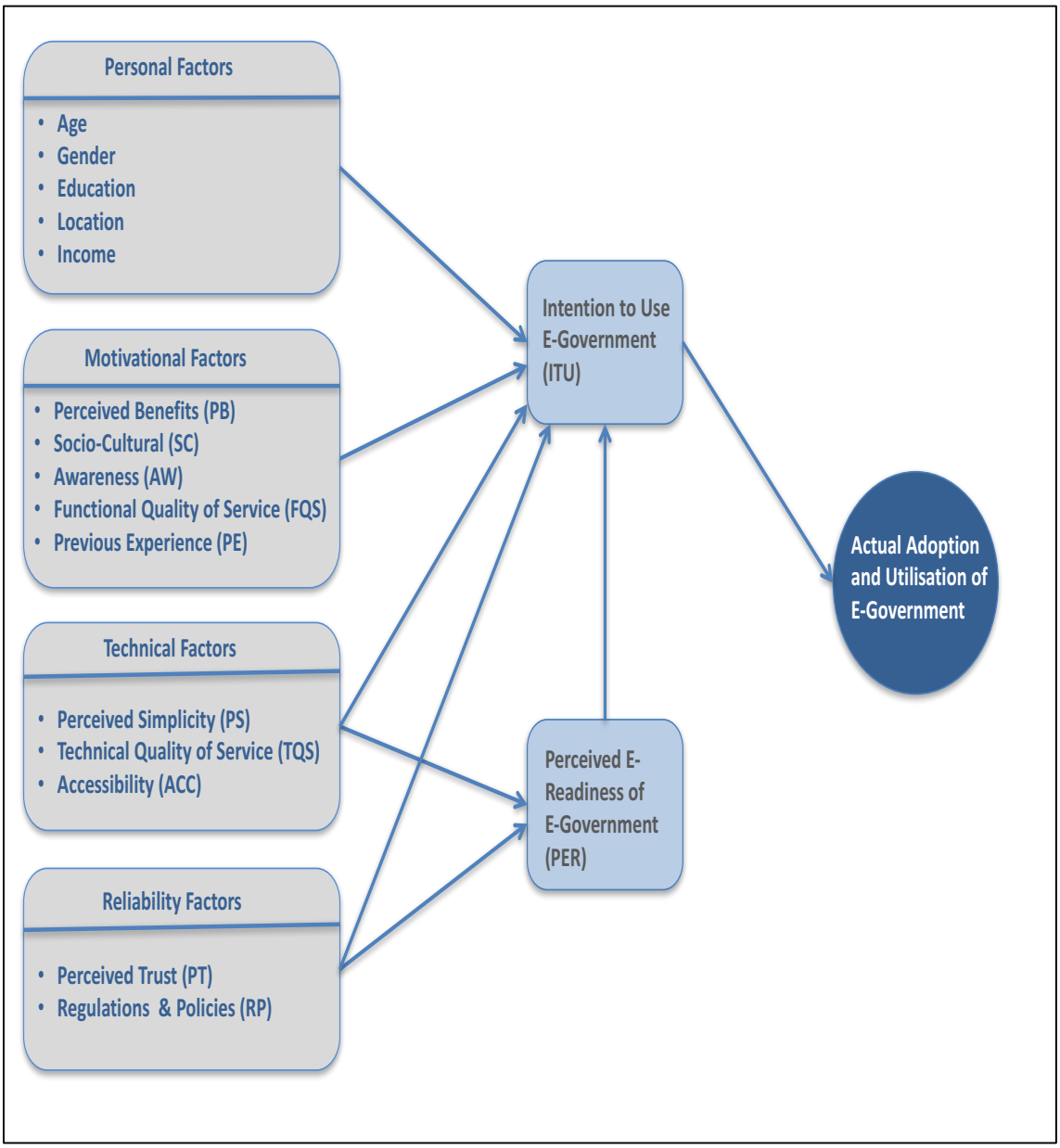

Figure 3.1: E-Government Adoption and Utilisation Model (EGAUM)

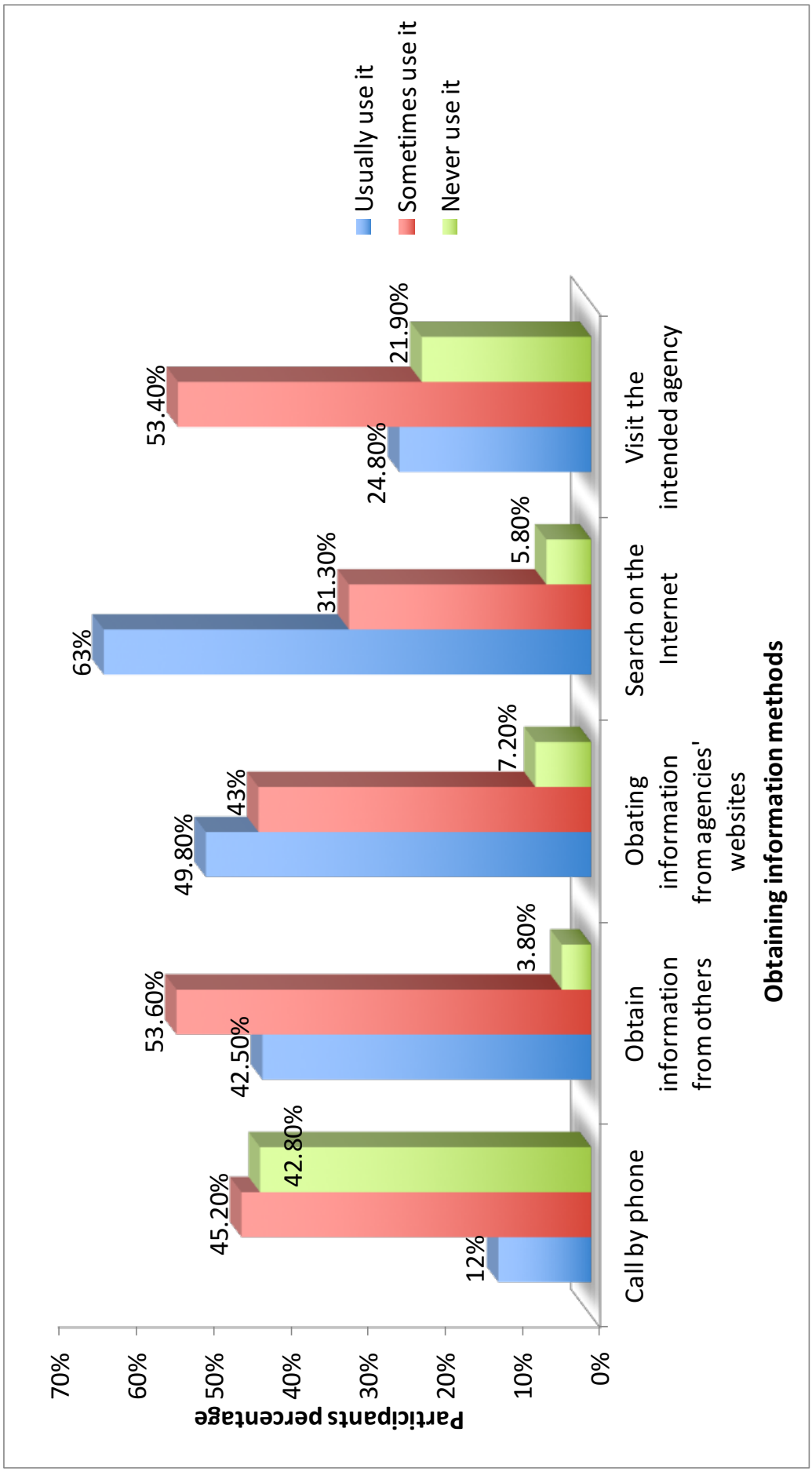

Figure 5.1: Methods of obtaining information about government transactions (citizens' sample)

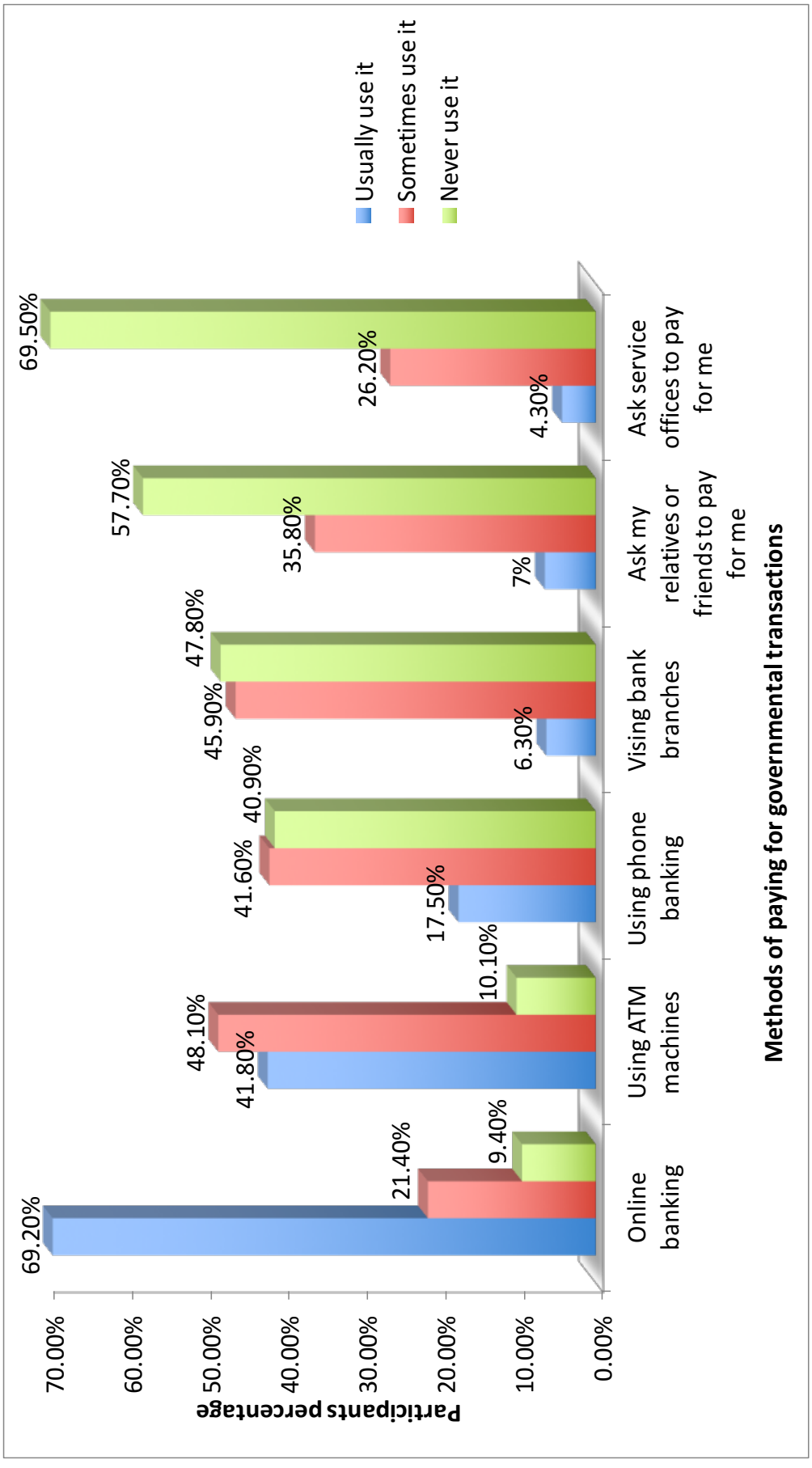

Figure 5.2: Methods of paying for government transactions (citizens' sample)

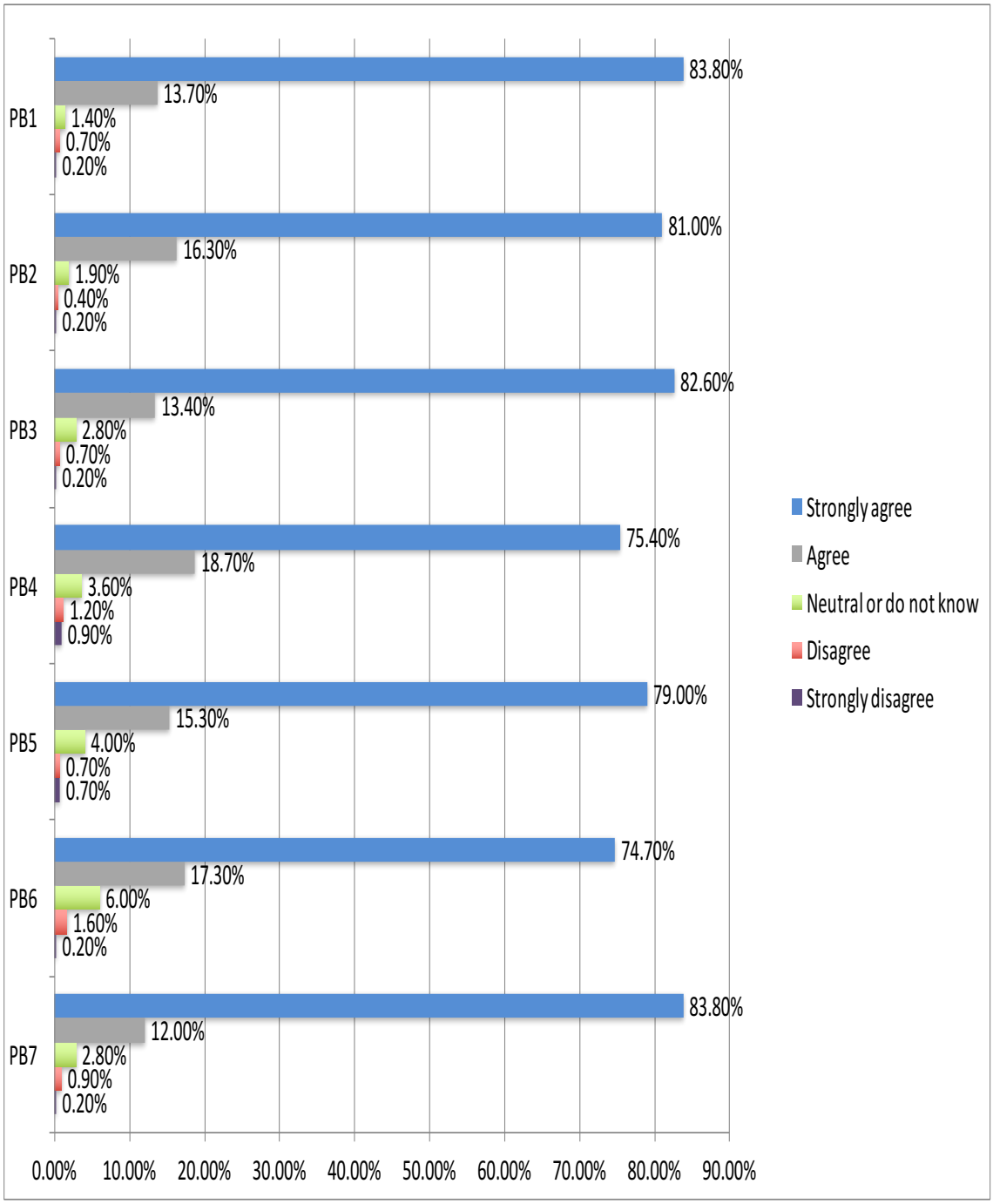

Figure 5.3: The results of PB measurement items (citizens)

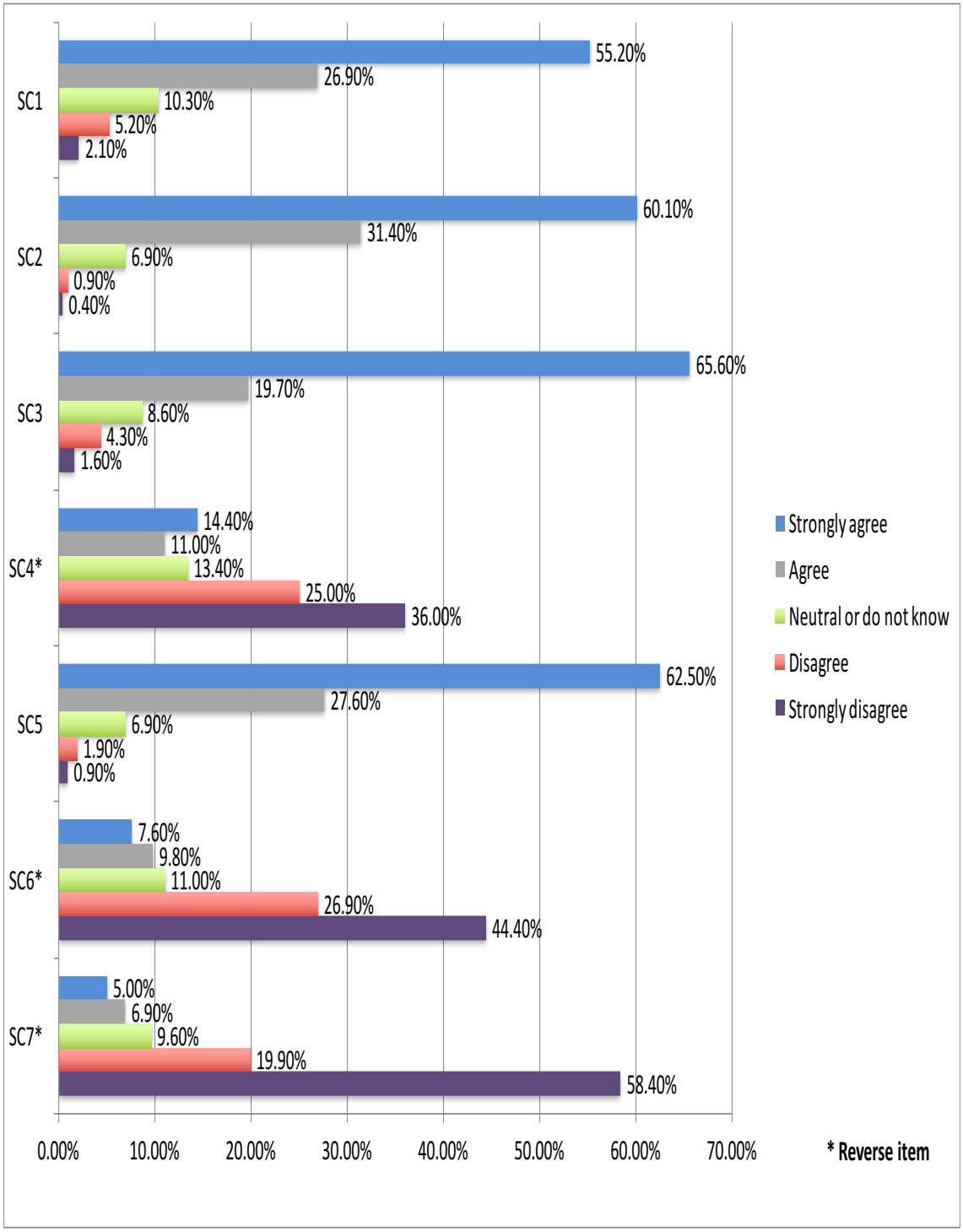

Figure 5.4: The results of SC measurement items (citizens)

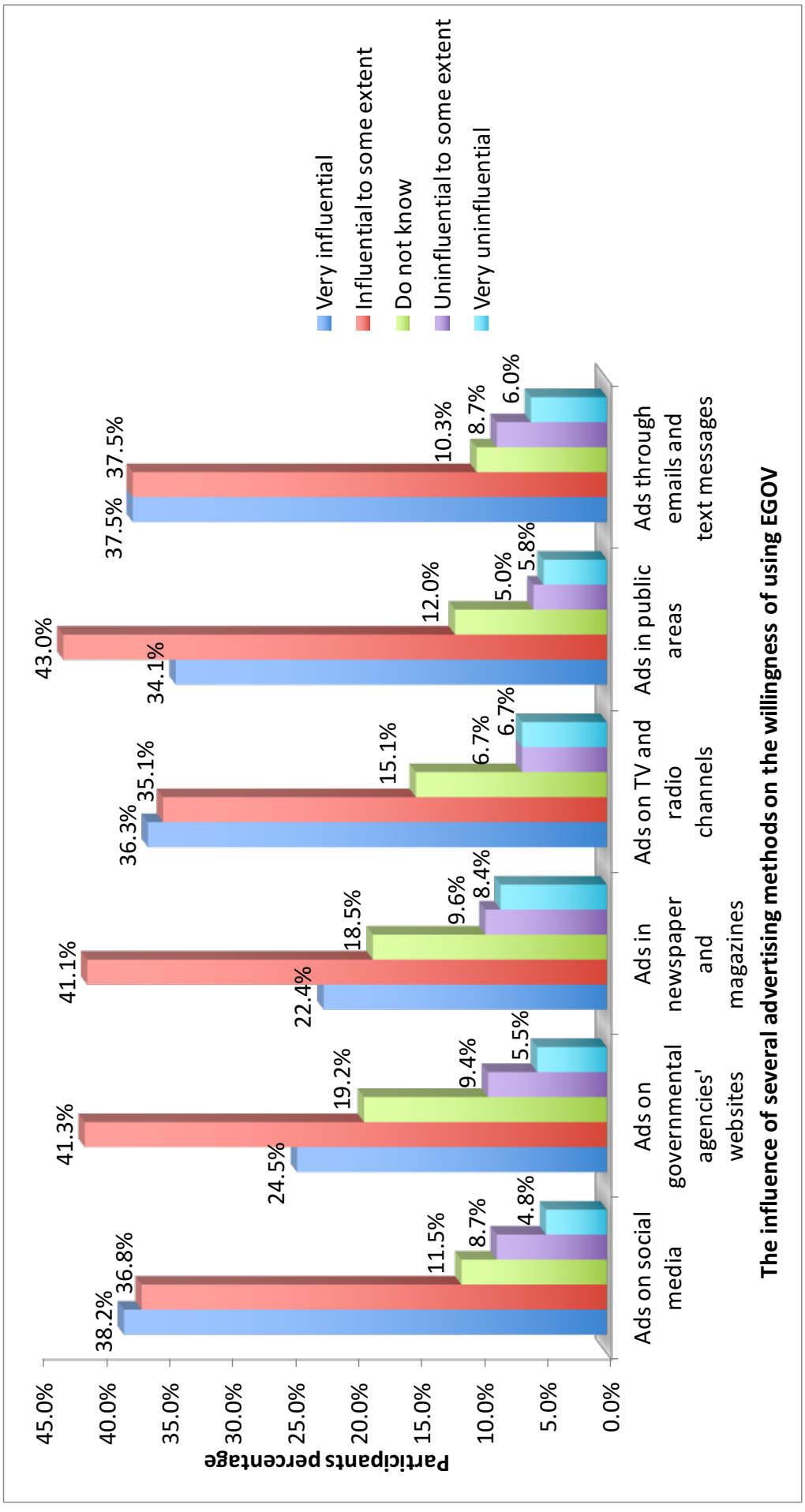

Figure 5.6: The result of AW part2 measurement items (citizens)

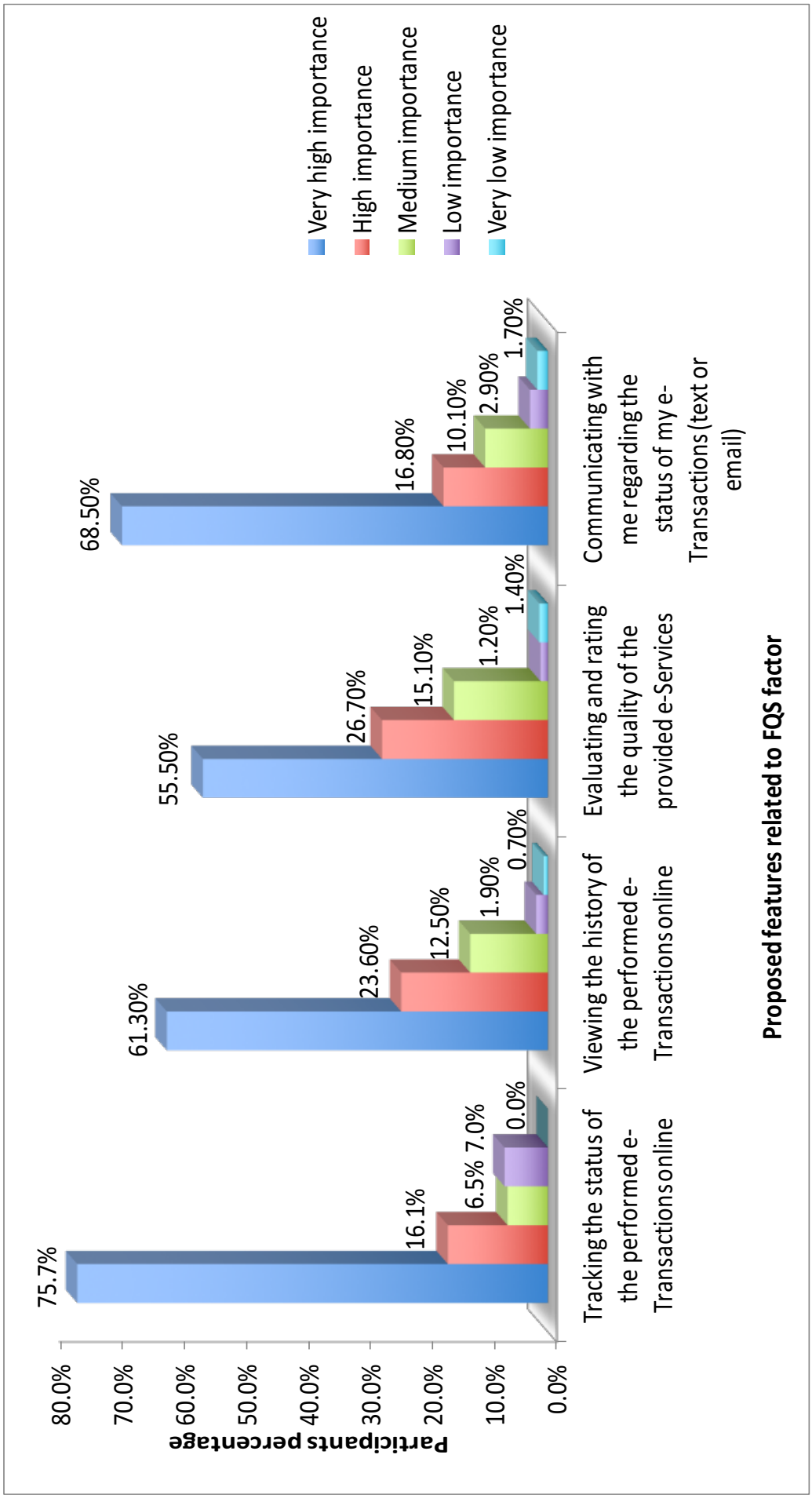

Figure 5.8: The result of FQS part2 measurement items (citizens)

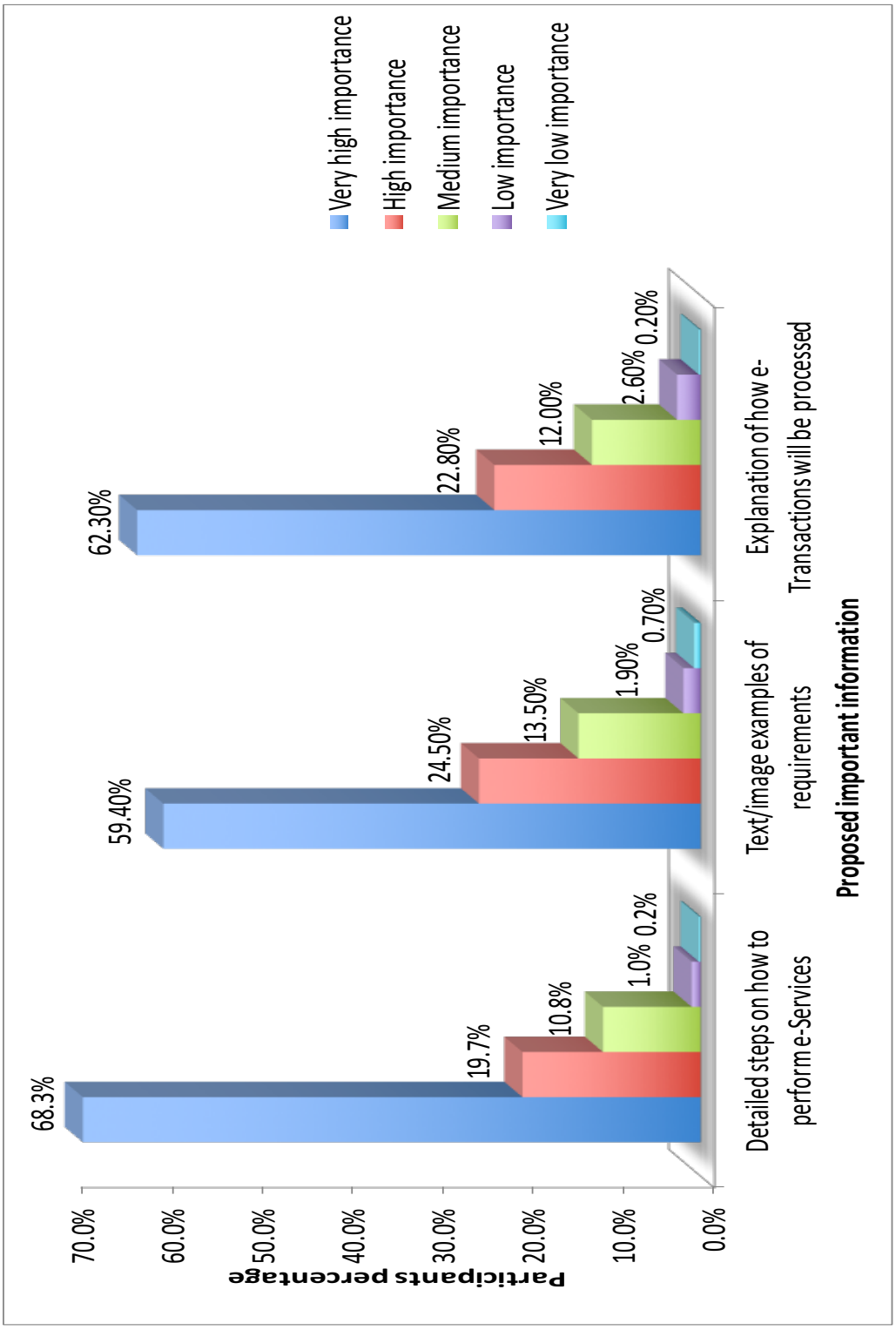

Figure 5.13: The result of PS part2 measurement items (citizens)

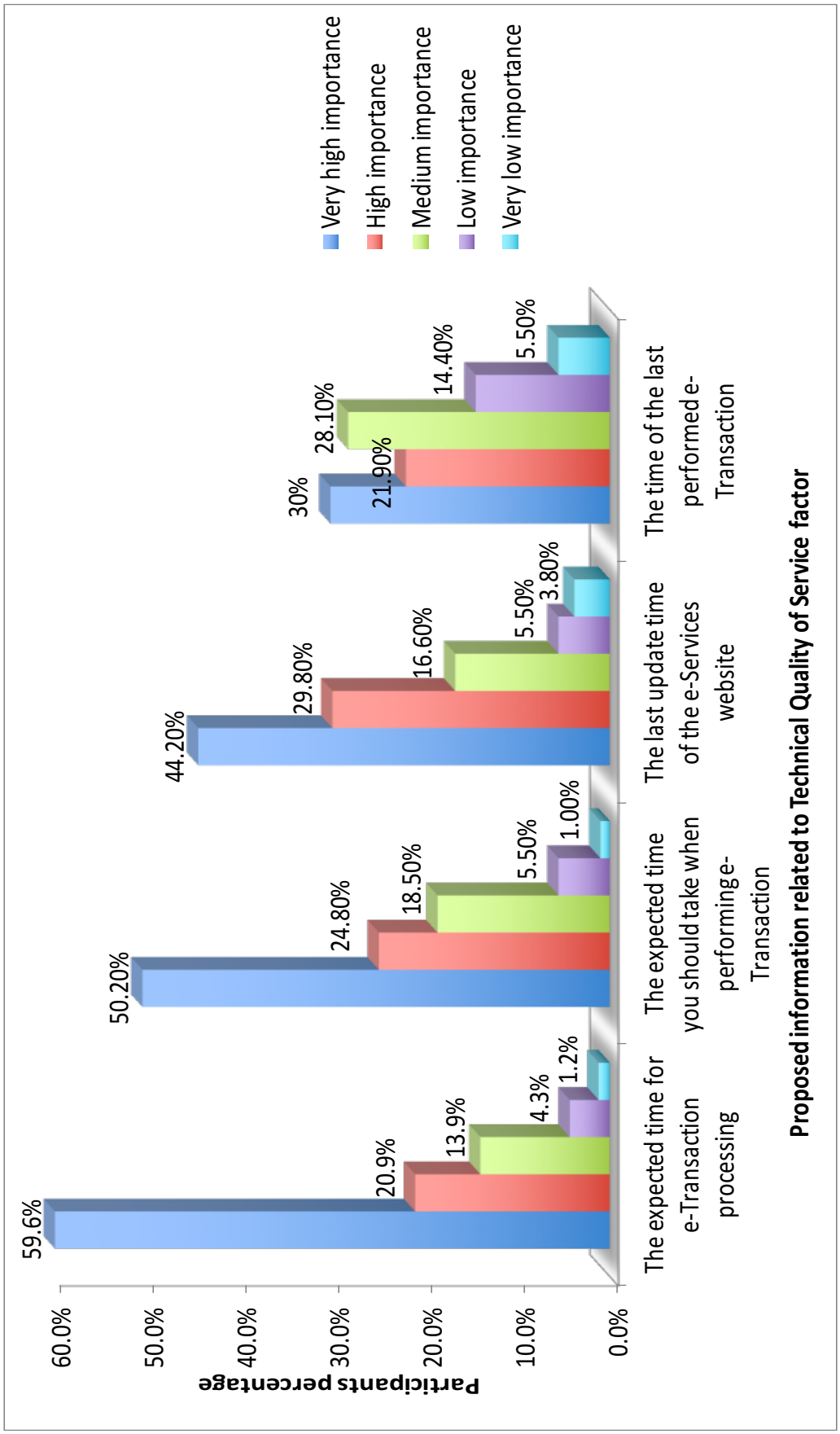

Figure 5.15: The result of TQS part2 measurement items (citizens)

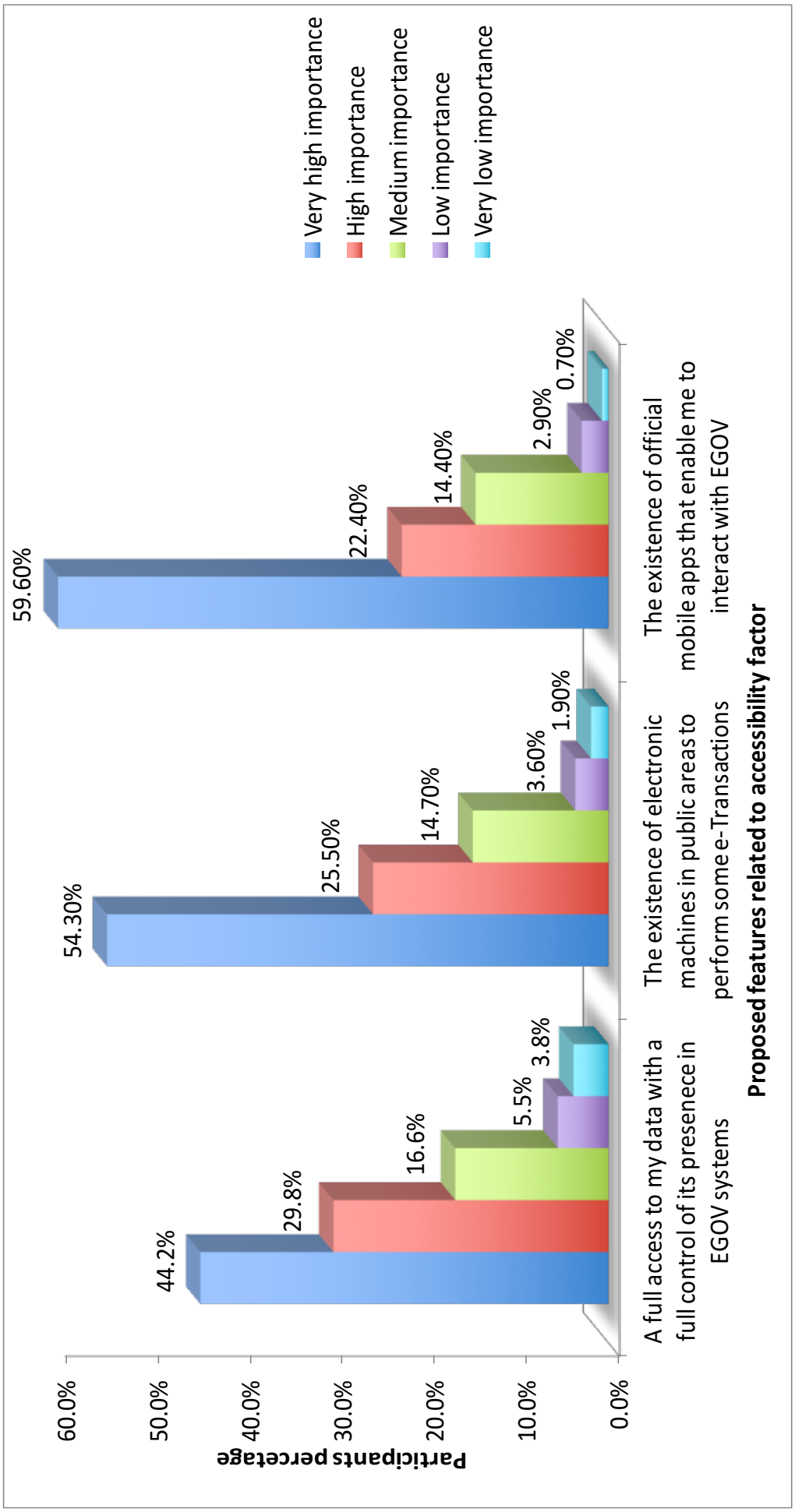

Figure 5.17: The results of ACC part2 measurement items (citizens)

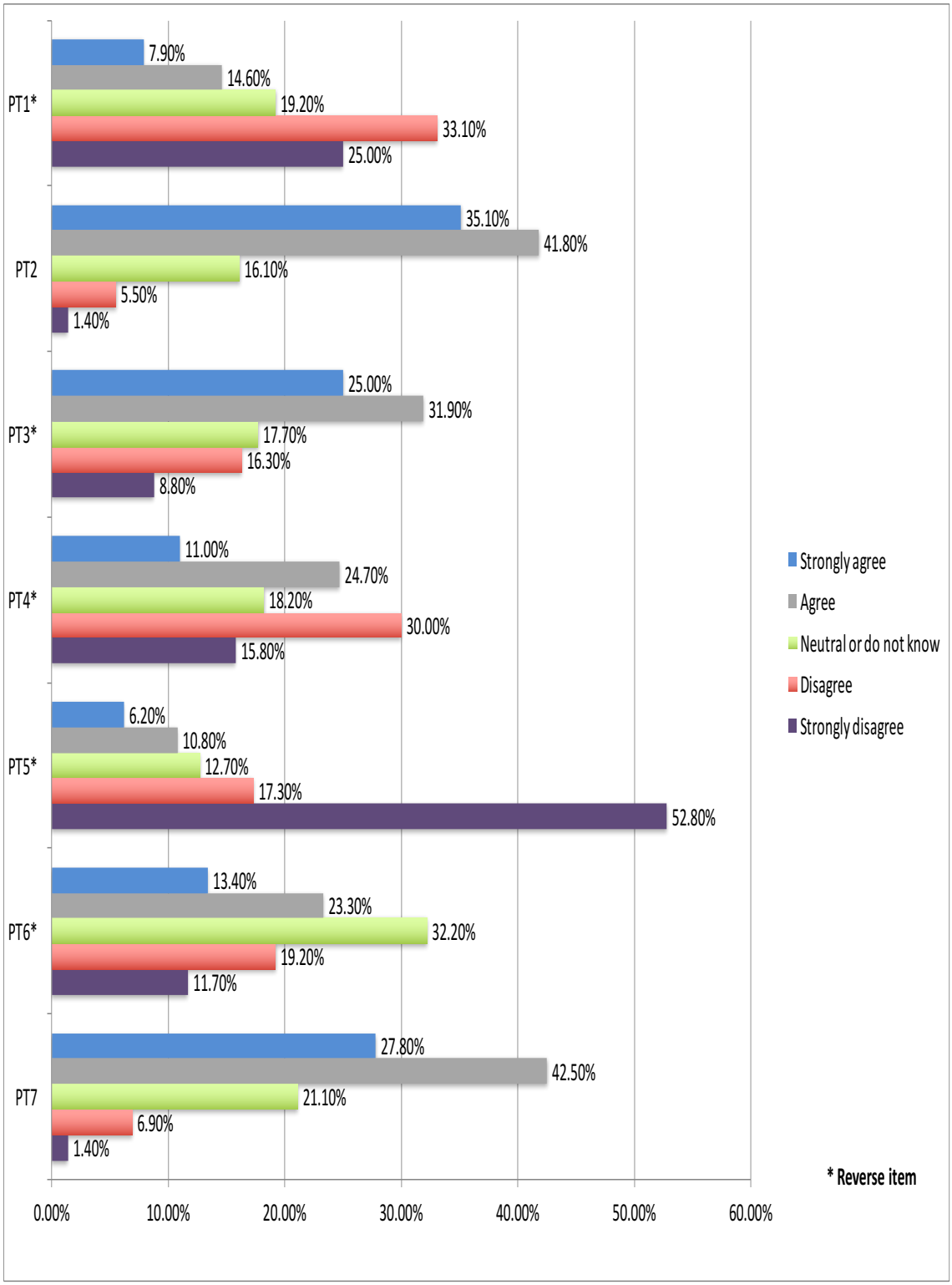

Figure 5.18: The results of PT measurement items (citizens)

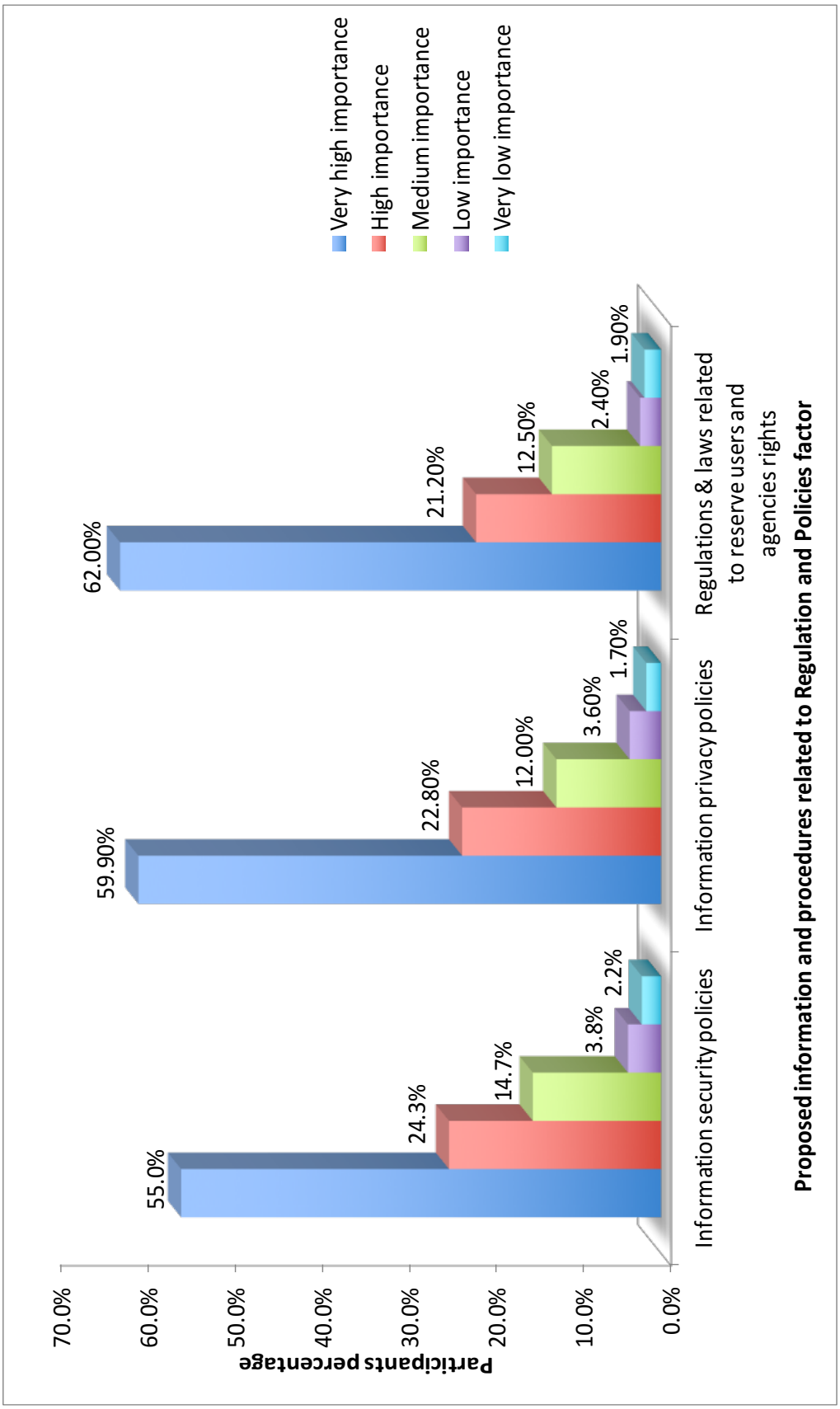

Figure 5.19: The results of RP measurement items (citizens)

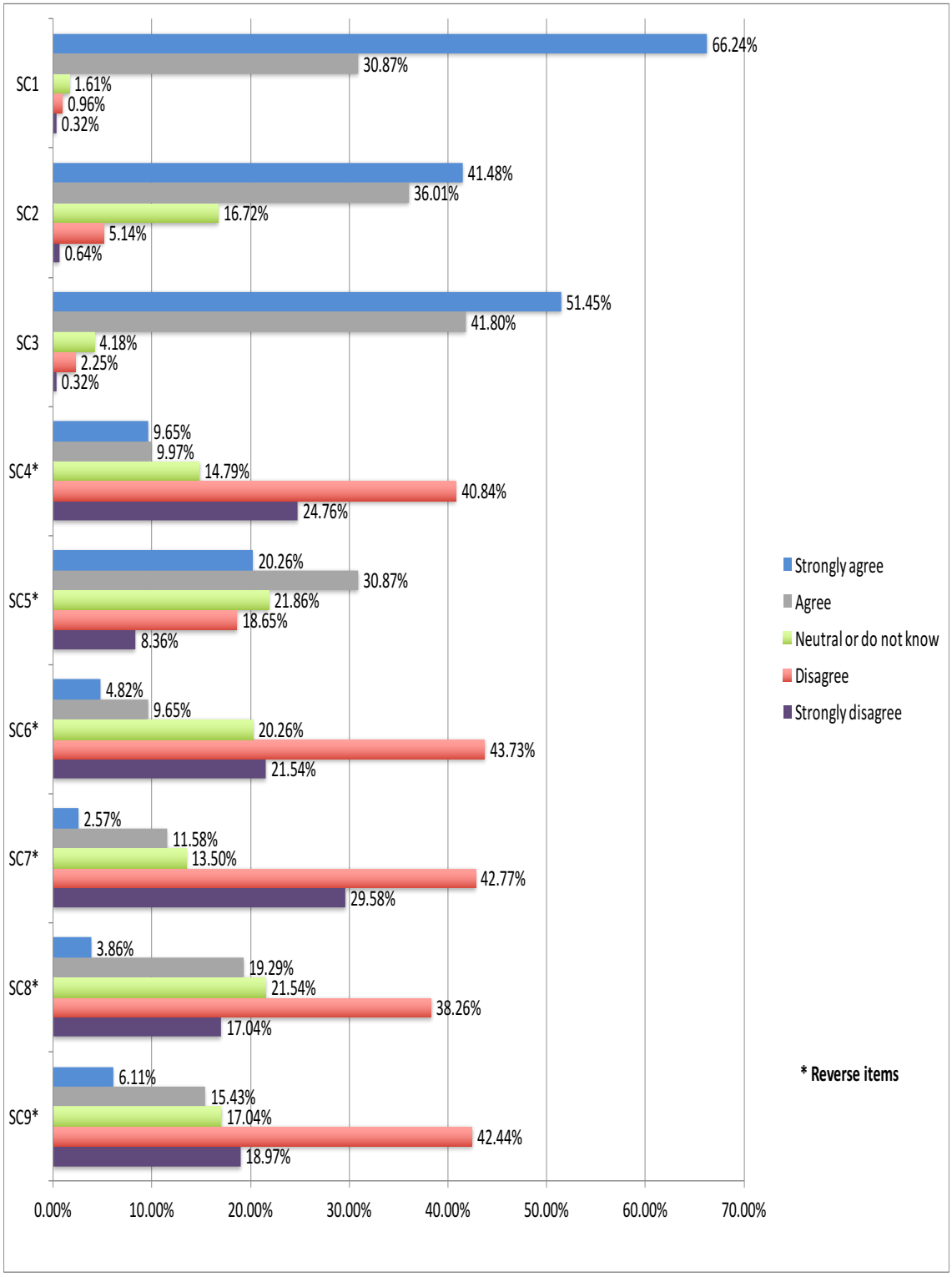

Figure 6.2: The results of SC measurement items (government employees)

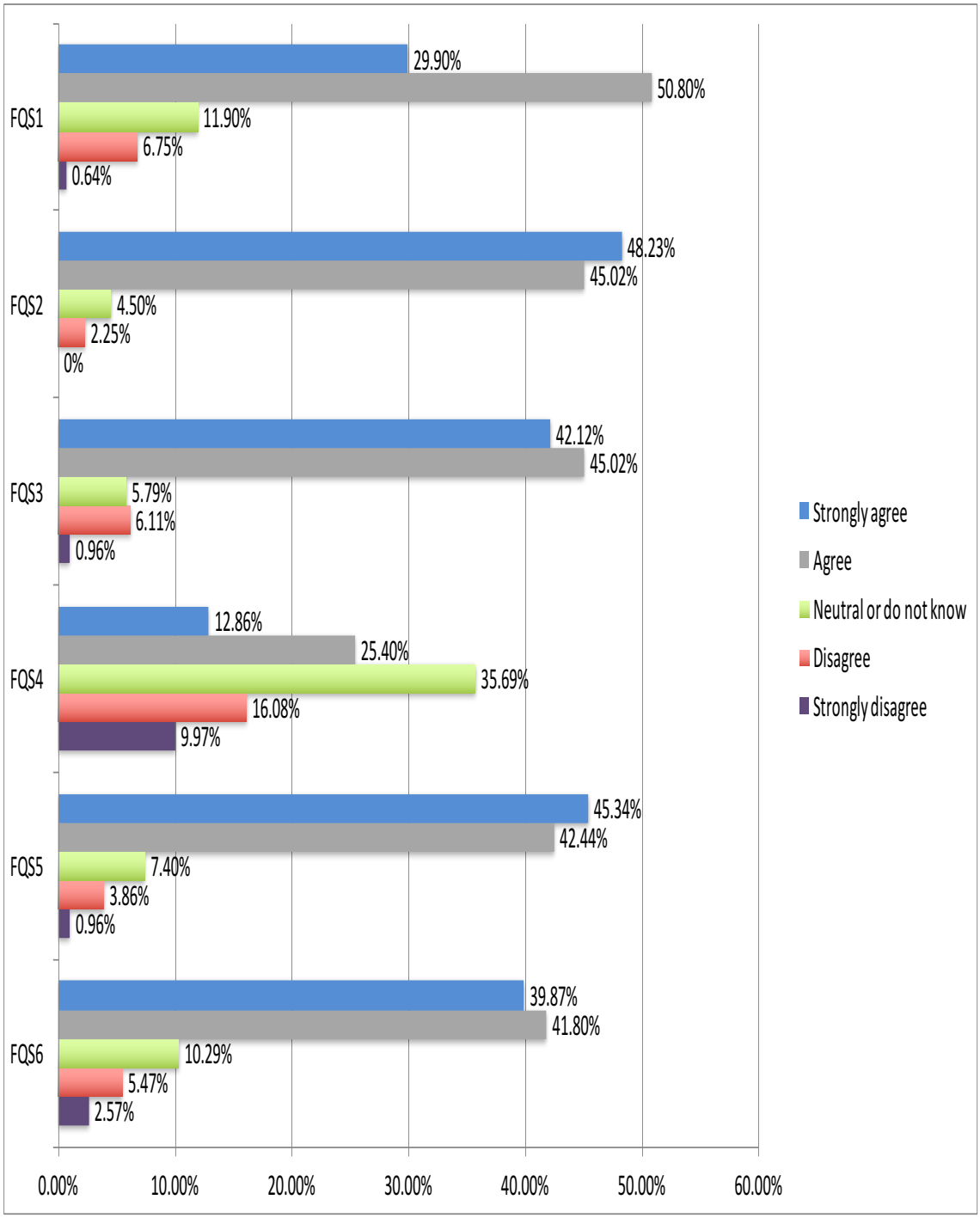

Figure 6.5: The results of FQS measurement items (government employees)

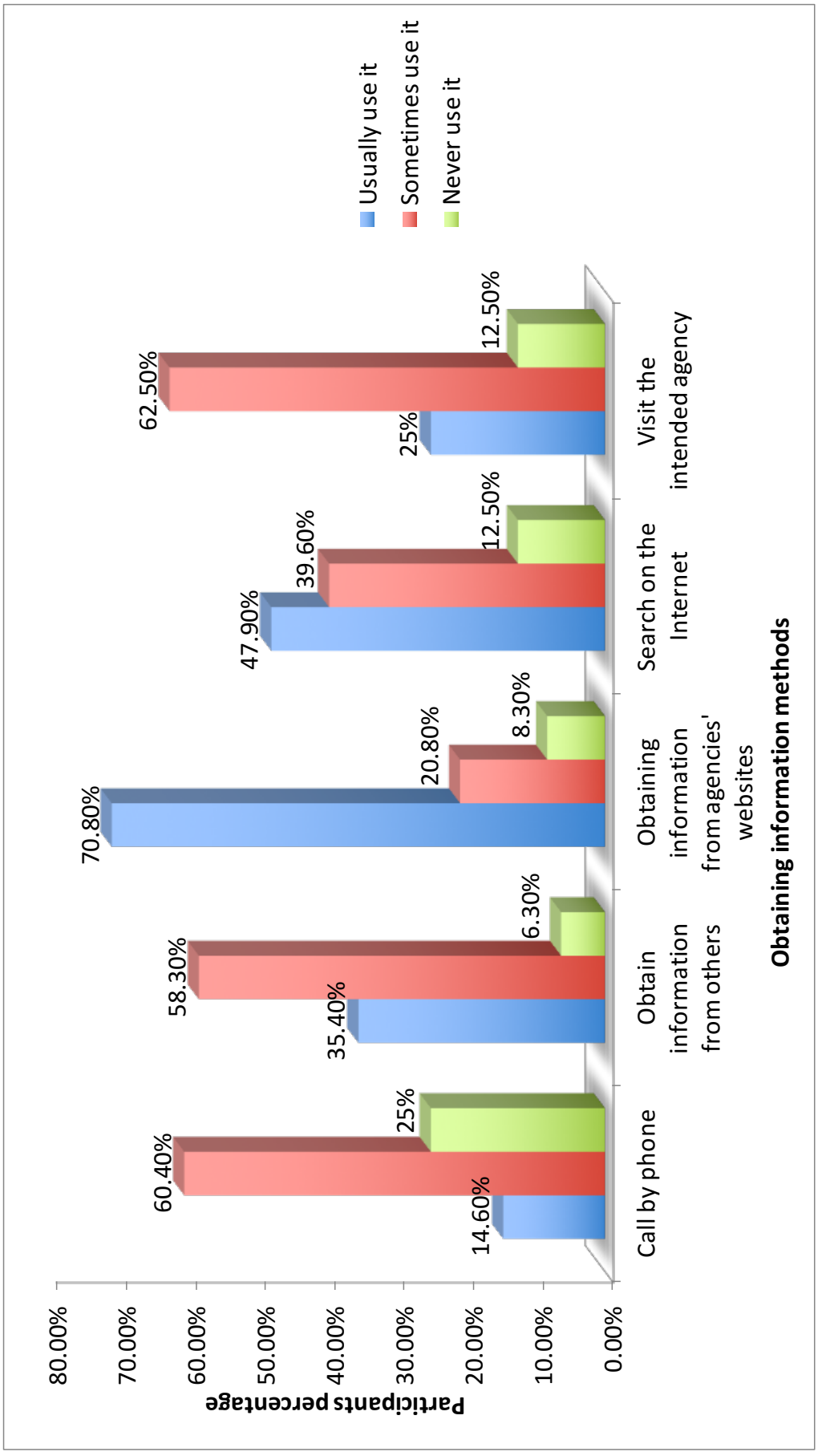

Figure 7.1: Methods of obtaining information about government transactions (business sector)

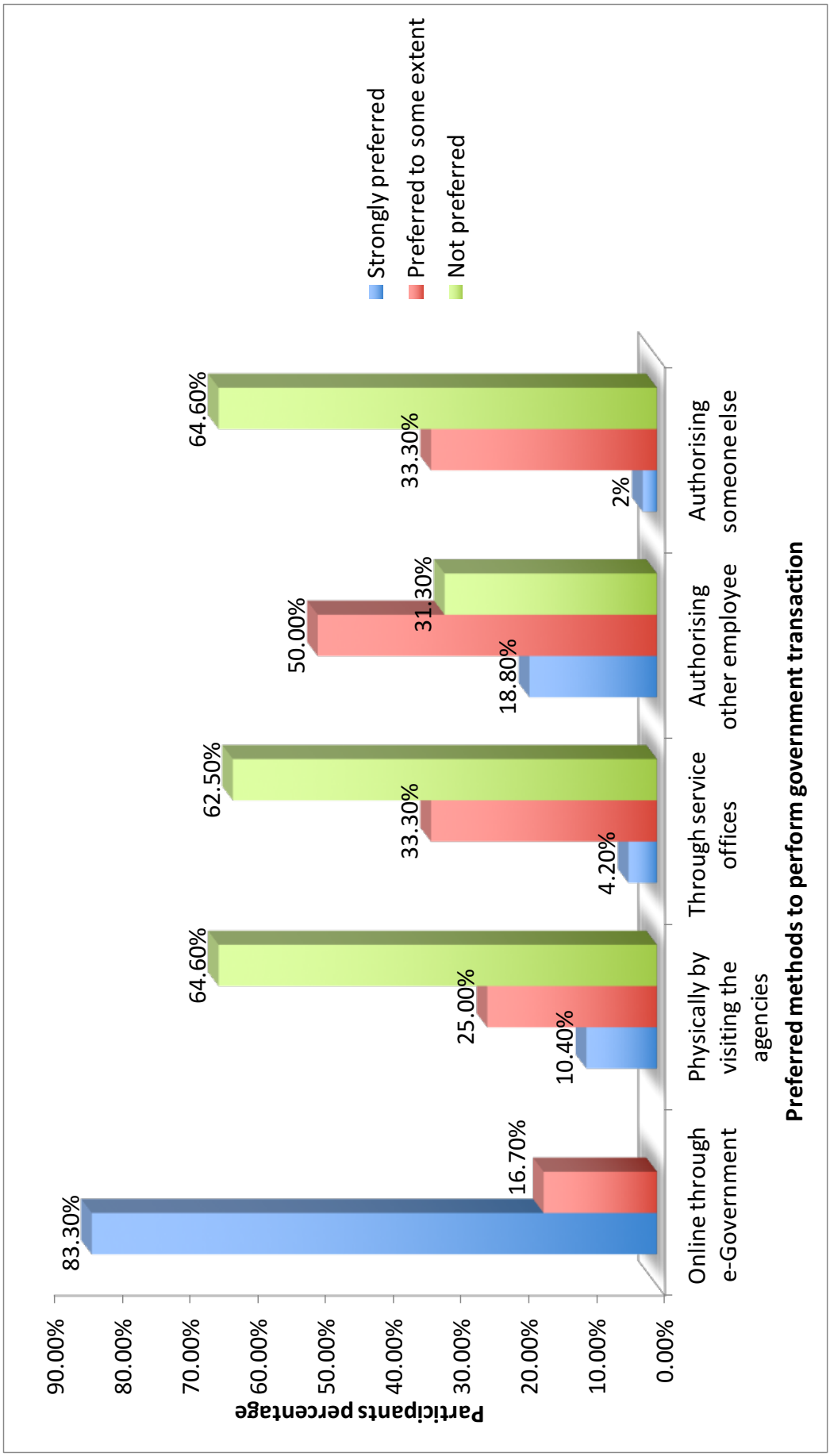

Figure 7.2: Preferred methods to conduct government transactions (business sector)

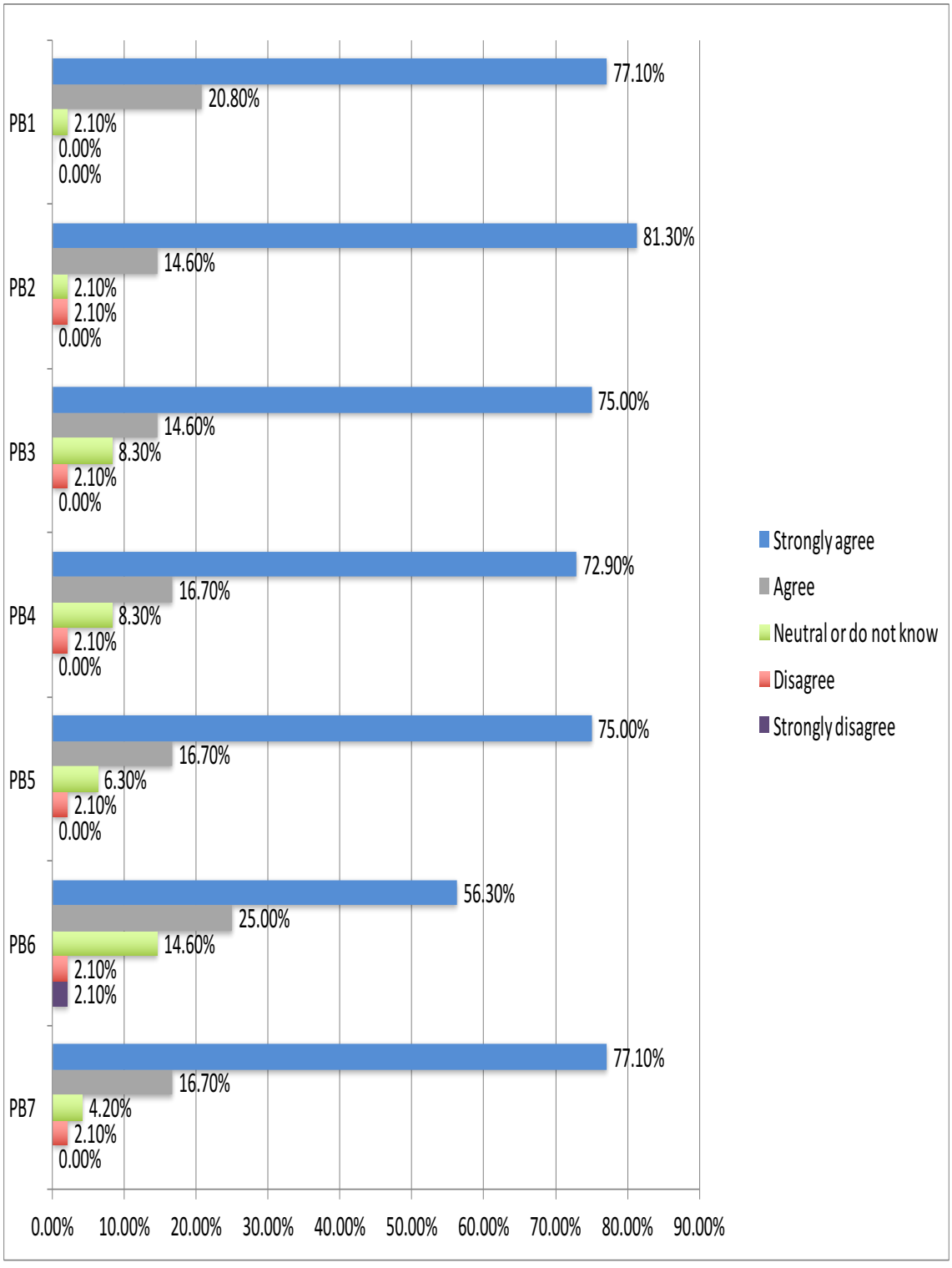

Figure 7.3: The results of PB measurement items (business sector)

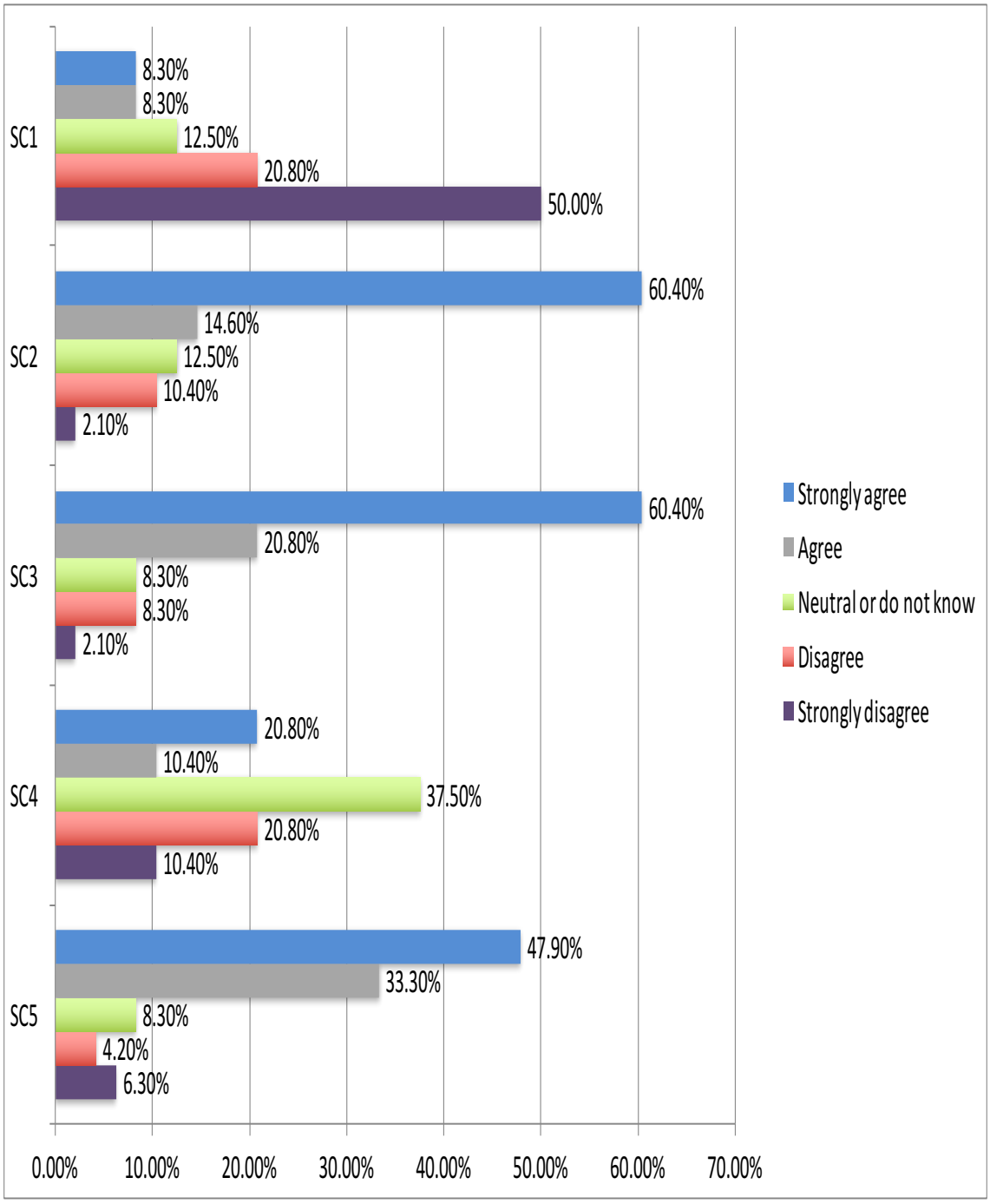

Figure 7.4: The results of SC measurement items (business sector)

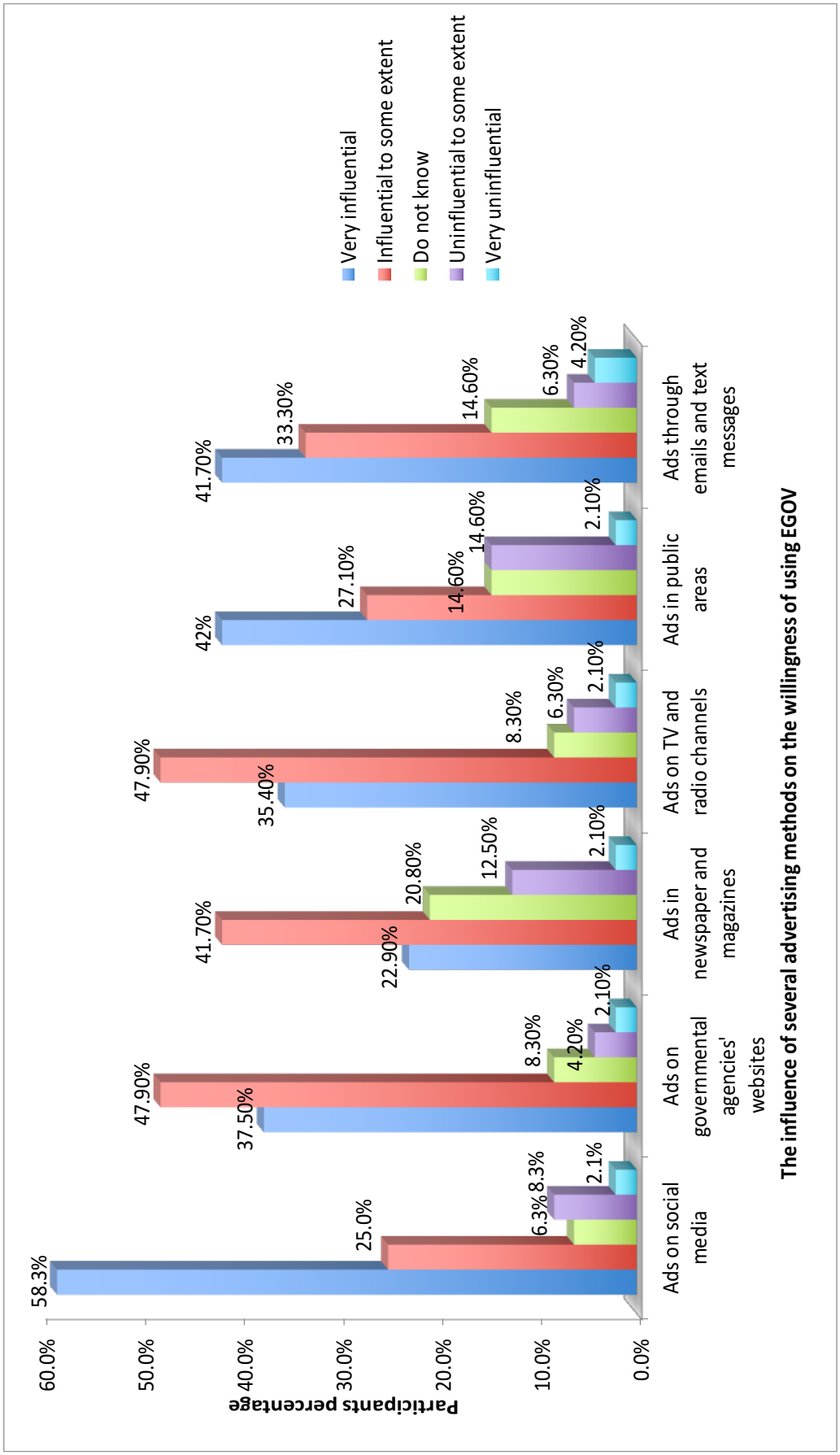

Figure 7.6: The results of AW part2 measurement items (business sector)

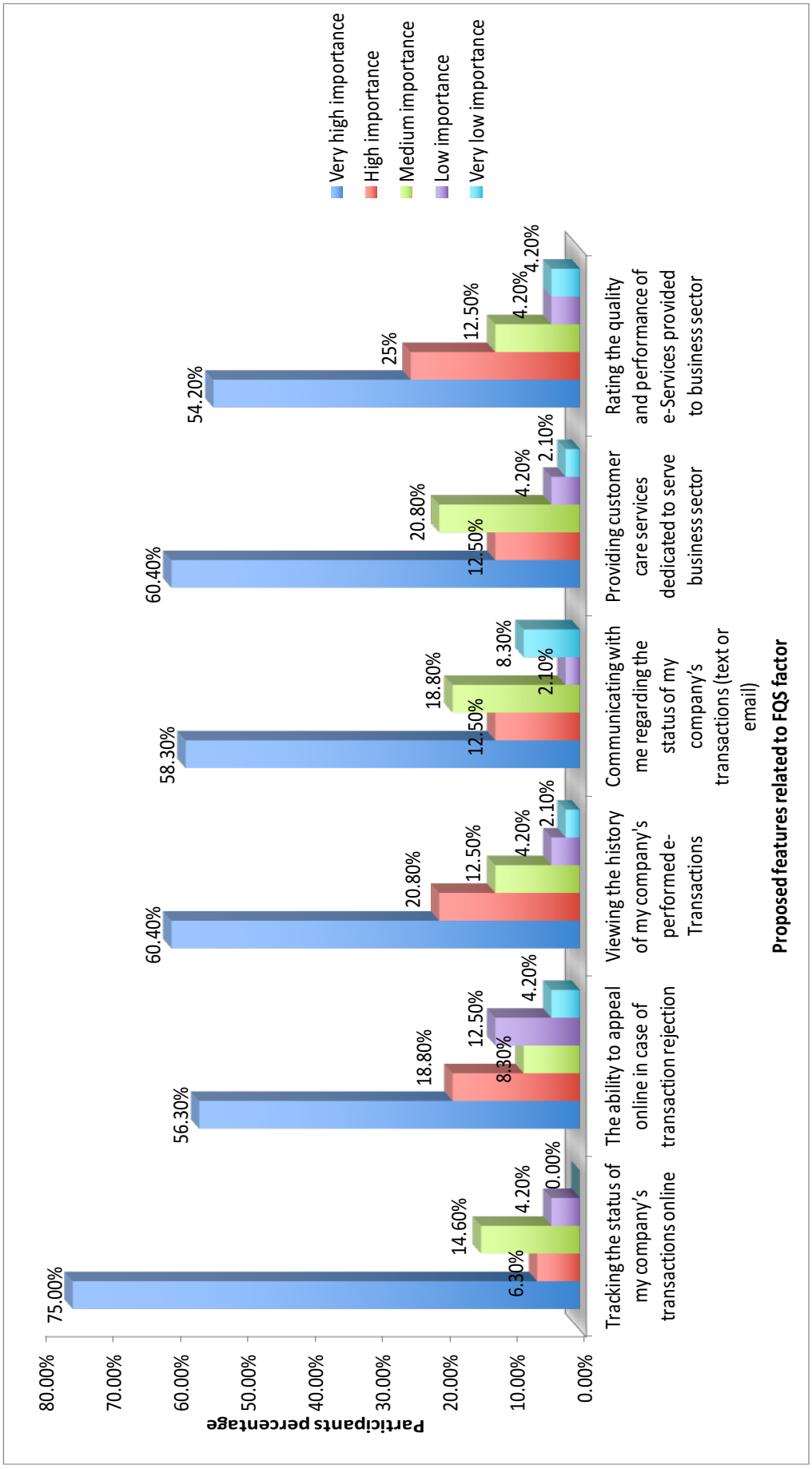

Figure 7.8: The results of FQS part2 measurement items (business sector)

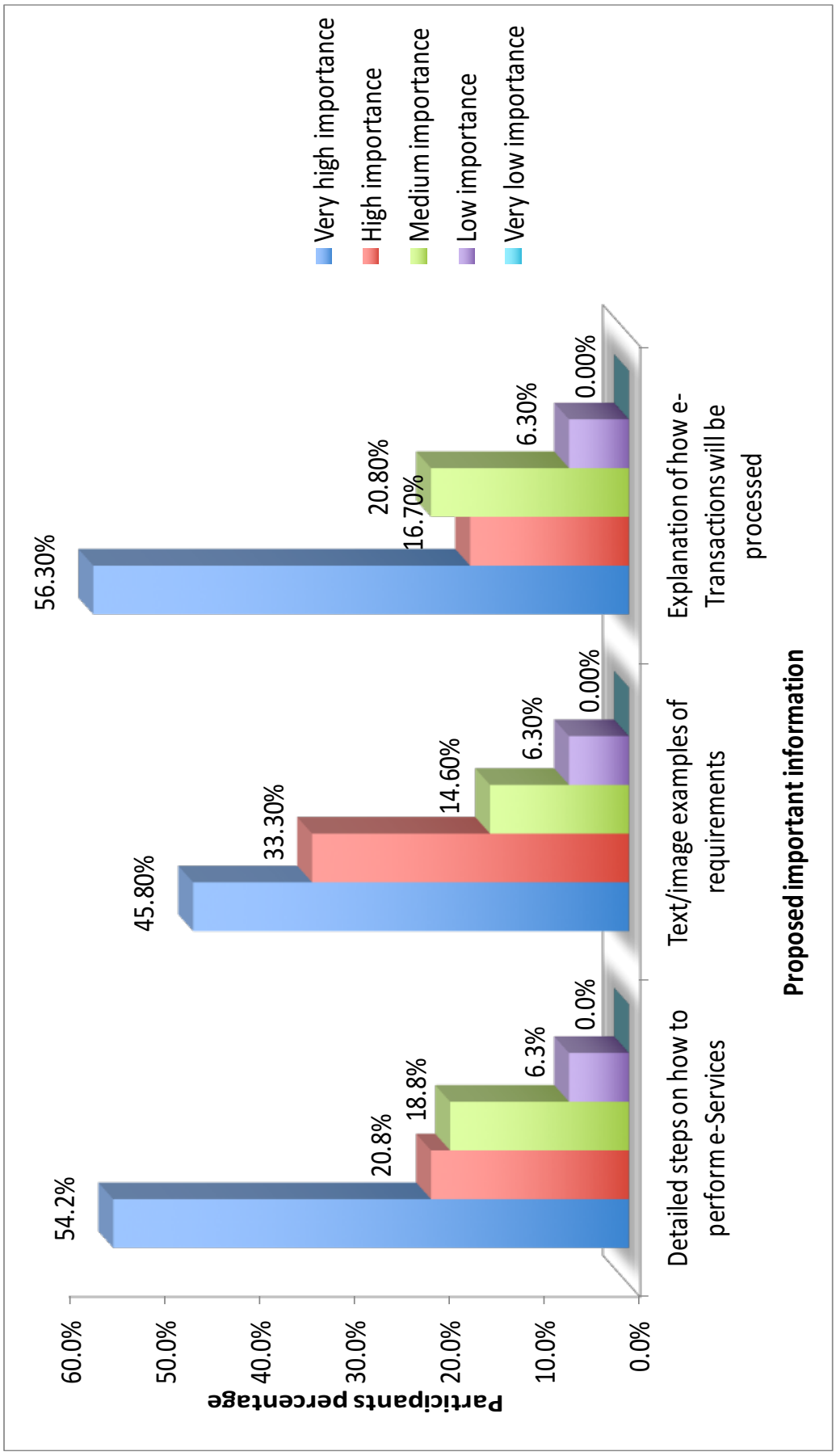

Figure 7.14: The results of PS part2 measurement items (business sector)

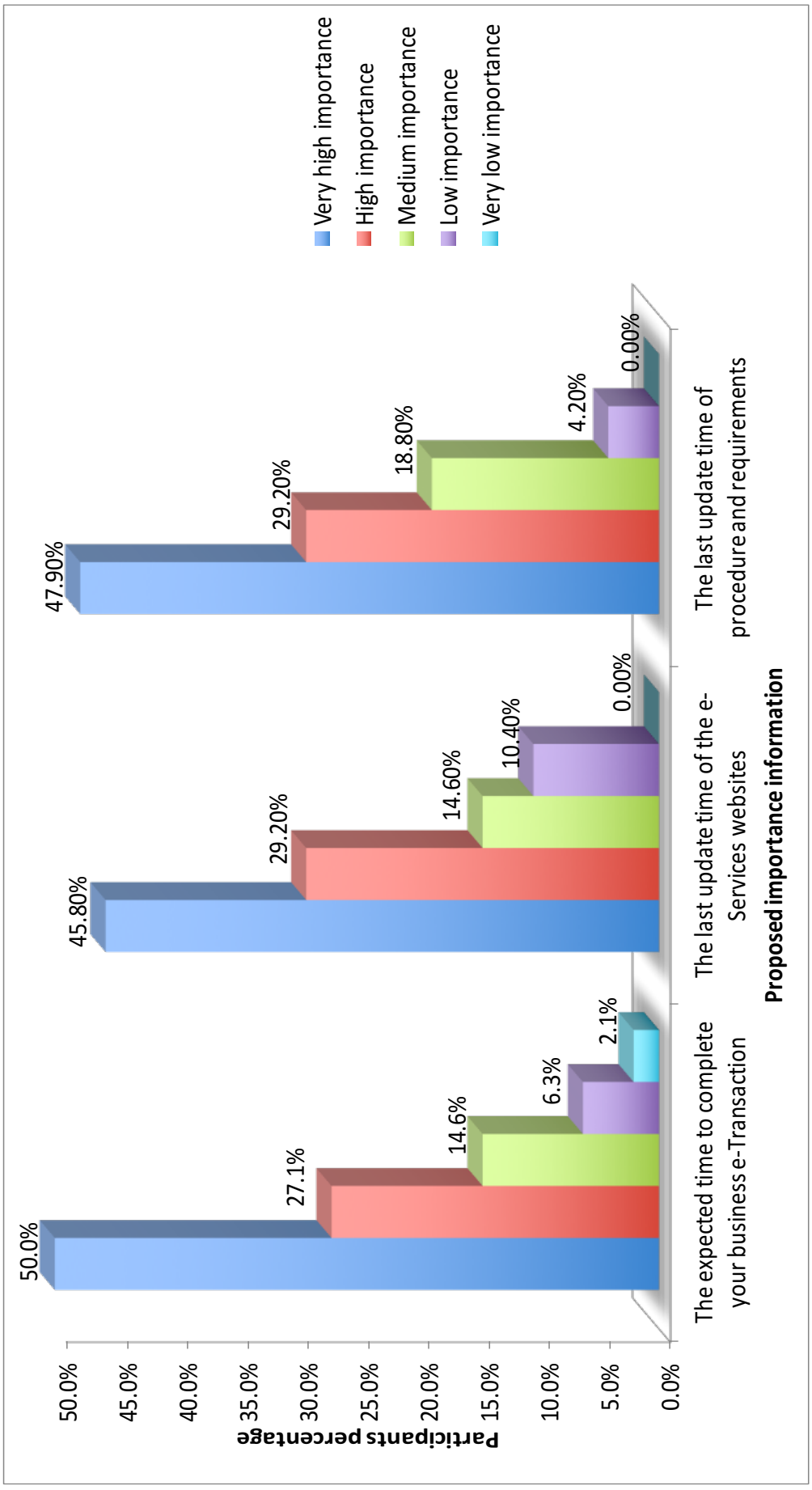

Figure 7.16: The results of TQS part2 measurement items (business sector)

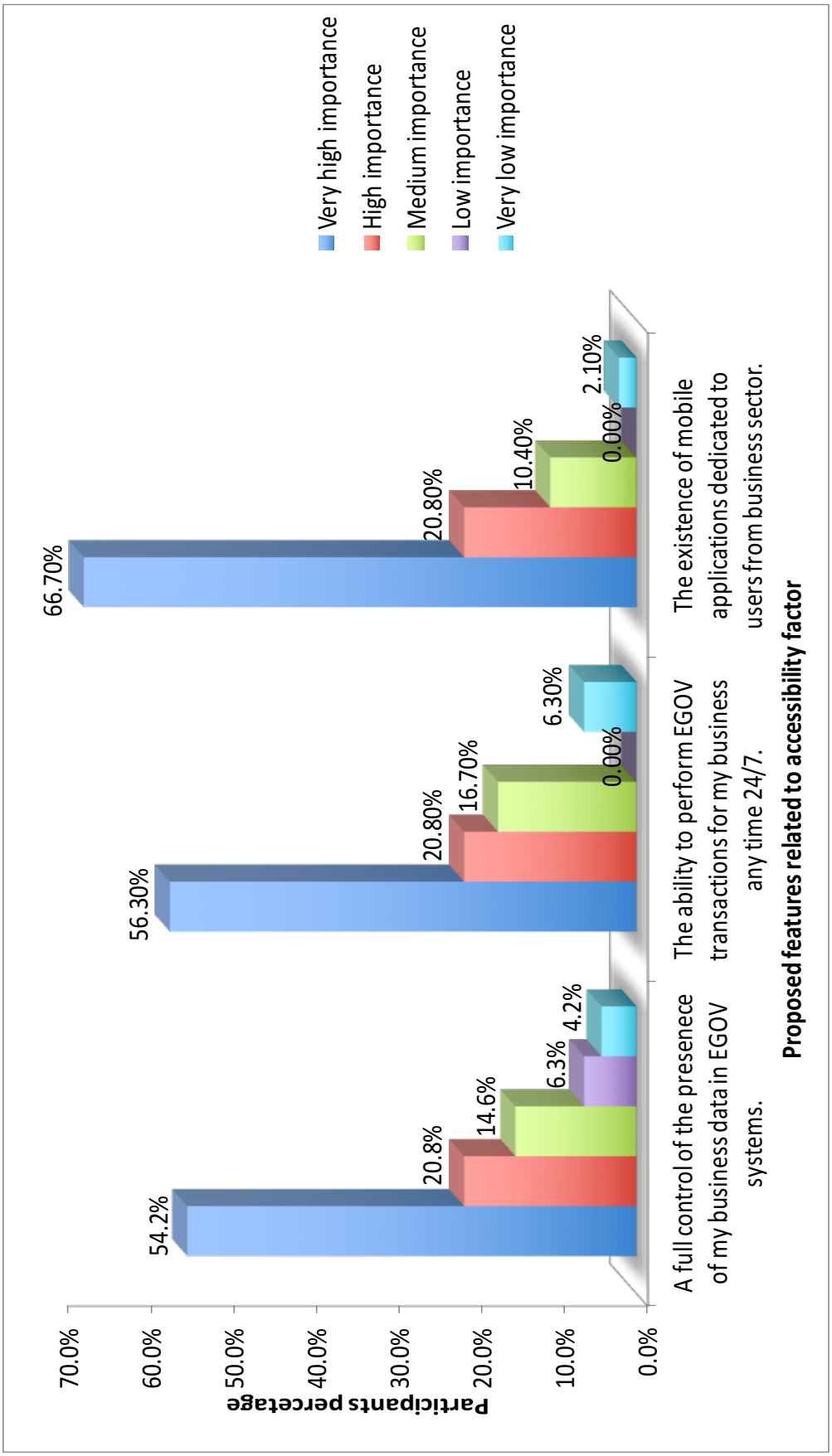

Figure 7.18: The results of ACC part2 measurement items (business sector)

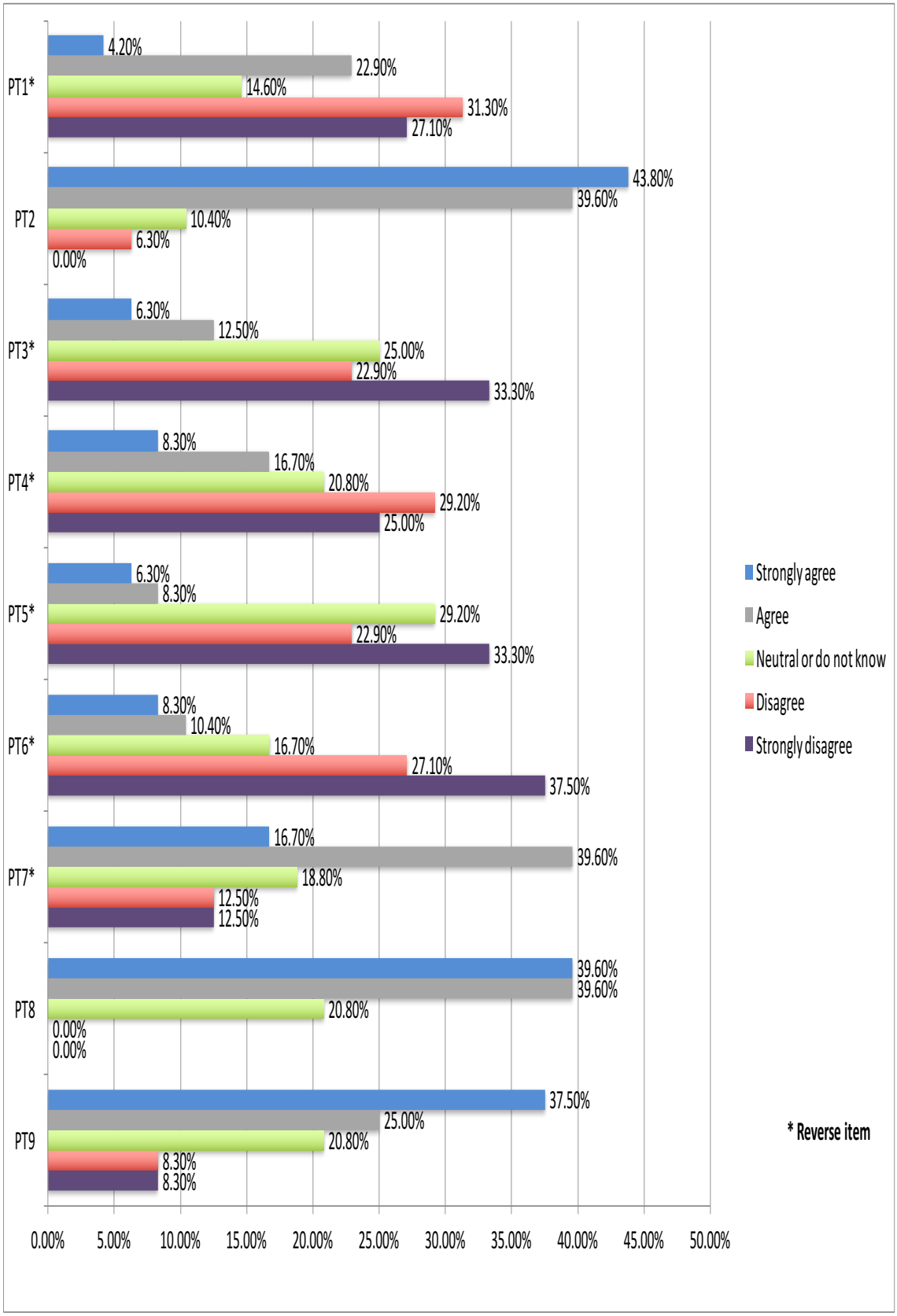

Figure 7.19: The results of PT measurement items (business sector)

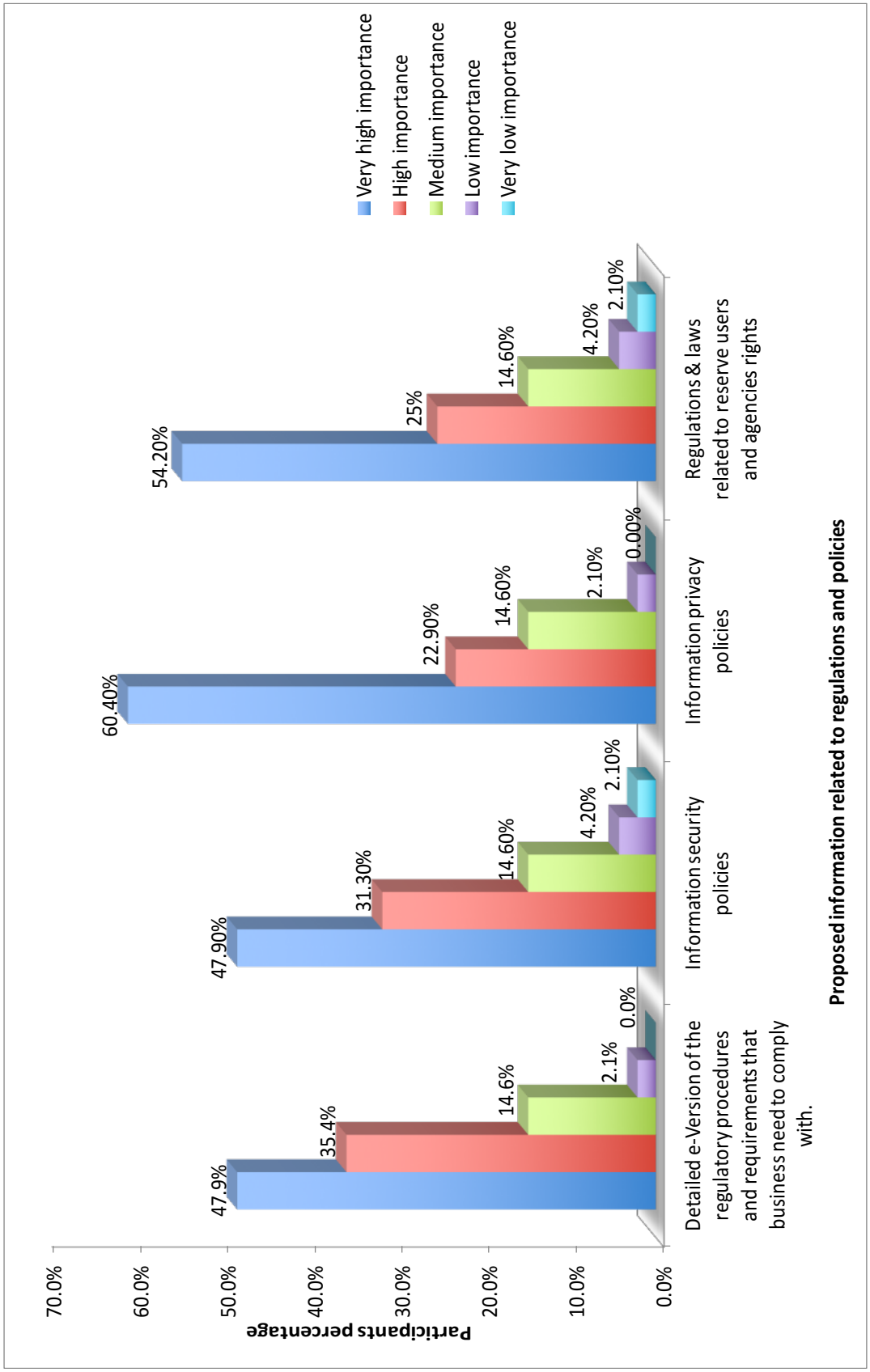

Figure 7.20: The results of RP measurement items (business sector)